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ABSTRACT

The objectives of this report are to determine whether there is a need to establish a statewide policy of early education in Ohio, to define what priorities are implied by such a need, and to suggest relevant recommendations for the establishment of a policy, if needed. Sixteen chapters (nine-tenths) of this report present information from research literature on the development of abilities or skills of young children necessary for school achievement. The effects of environmental deprivation on learning are also discussed. The report urges that Ohio establish a policy in early education to assure quality preschool and kindergarten programs for children in poverty-depressed areas. Specific recommendations are made for curricular content, teacher training, welfare services, administration, and work in conjunction with existing and needed legislation. Bibliographic references are given. Three appendixes contain data on (a) estimates of children by age for Ohio counties, (b) technical procedures for projecting children by age for Ohio counties, and (c) state regulations for kindergarten as reported in a national survey. (WY)

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FINAL REPORT

on

PRESCHOOL EDUCATION

to

OHIO DEPARTMENT OF EDUCATION

September, 1969

by

Dennis N. McFadden

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FOREWORD

This report is one of a series of reports prepared by the staff of Battelle Memorial Institute, Columbus Laboratories, for the Ohio Department of Education under a contract research project entitled PLANNING TO MEET EDUCATIONAL NEEDS IN OHIO SCHOOLS. Funds for the project were made available by the Ohio Department of Education under provisions of Title III, ESEA.

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PRESCHOOL EDUCATION

I. INTRODUCTION

Recent years have seen an upsurge in research on the cognitive processes of young children. Bloom (31), Hunt (202), Hebb (188), Bruner (44), and others have stressed that the amount and nature of early experience significantly enhances the development of the child's intellectual and perceptual capabilities. Deutsch (94), Jensen (371), Sigel (351), and others have found that, in the absence of sufficient environmental stimulation, learning disabilities accrue cumulatively and affect significantly the performances of children in school and in tests of intelligence.

In view of the importance of early experience and its effect on the development of young children, it is appropriate to examine what information is available for developing policies concerning the early formal education of young children – that is, policies which delineate the school's responsibility in providing organized educational programs at the preschool level.

This report seeks therefore to define whether a need exists for establishing a statewide policy of early education in Ohio. Exactly what that policy should be will be determined on the basis of the following: whether the state of the art resulting from research and implementation programs in this area permits the development of a sound theoretical and empirically defined base for early education for young children and the extent to which a program so defined will affect subsequent school achievement. This latter point is significant insofar as it suggests that the criterion for measuring the success of preschool programs is the successful achievement of children during the formal school years.

Objectives

The objectives of the study are to

- Determine whether a need exists for establishing a statewide policy of early education in Ohio
- Define what priorities, if any, for preschool education are implied by the need
- Suggest what recommendations are relevant to and appropriate for the establishment of such a policy.

Procedures

The procedures include a thorough and detailed analysis of the existing state of the art concerning the development of the capabilities of young children which are thought to be linked to subsequent school achievement. In addition, the procedures include an analysis of the research findings to determine if the integration of such knowledge can serve as a base for the development of a formal educational program for preschool children in Ohio.

Assumptions

The assumptions underlying the procedures are that

- The acquisition of skills and abilities sampled by established measures of tests of intelligence mediate significantly achievement during the early formal years of school
- The availability of the skills now measured by tests of intelligence are the direct result of the child's prior opportunities to learn and to experience
- The patterns of development of the skills are characterized by qualitative changes over time
- The absence of certain opportunities for learning will lead to a depression of the skills and, subsequently, the development of disabilities to learn
- The development of learning disabilities will be characterized by a cumulative deficit in patterns of school achievement.

In other words, the skills sampled by tests of intelligence are skills which the child needs in order to achieve in school. It is assumed that the skills can be learned.

Strategy of Analysis

The strategy of the analysis is to link the development of a preschool education program to subsequent school achievement on a logical and empirical basis. The logical analysis will include a consideration of the skill areas which are sampled by major tests of intelligence. The consideration to be undertaken on the basis of evidence suggests that the child's opportunity to learn the skills measured by tests of intelligence has a positive and substantial relationship to his school achievement. The empirical analysis will link the depression of these skills to cumulative deficits in patterns of school achievement because of the absence of environmental opportunities.

Research Questions

The report will address itself specifically to the following questions.

Is the measured intelligence of preschool children related to the environmental experiences of the home and neighborhood in which children are reared?

The major thrust of this question is to examine the evidence suggesting whether or not the enrichment of the environment will result in improving significantly the performances of children on tests of intelligence. There is little question today that the level of general intelligence of a child as now measured at age six has a positive and highly significant relationship to his academic achievement in school. If it can be demonstrated that it might be feasible to raise the average level of measured intelligence of children aged three to five, the implications for a sound scientific educational psychology of early experience would be quite substantial.

What are the psychological characteristics of the preschool child which tend to relate to the level of measured intelligence and to what extent are these characteristics dependent upon early environmental experiences for their sound development?

Here we are primarily interested in the early preschool development of perceptual cognition processes*, language, socialization skills and the self-concept behavior** of the preschool child. The intent here is to explore the evidence which suggests the presence of a multiplicity of factors underlying the performances of young children on tests of intelligence, and to focus on the environmental experiences which bring them into play. The major purpose is to obtain a sufficient understanding of the conditions at work in the development of behaviors which are thought to be highly related to the measured level of general intelligence and subsequent future academic achievement. Attention will also be given to what happens to these areas of development in the absence of the desired environmental conditions. By and large, the approaches to preschool education (e.g., Head Start and nursery schools) have been content simply to get in and do something, particularly for children from poverty-depressed areas. These approaches are thought to be good and probably are, but there has been little effort to gear the programs to a solid theoretical and empirical base. A close analysis of the quality and kind of environmental experiences known to be related to the development of psychological characteristics which relate to the average level of measured intelligence of the preschooler will provide a reasonable framework for establishing the theoretical and empirical base necessary for devising action-oriented policies for early educational programs.

What are the basic relationships between the biological needs of the growing child and his capacity to benefit directly from an active interaction with his environment?

Plans for the experience of learning, no matter how well drawn, usually presuppose the existence of normal, healthy, energetic young children. To satisfy the criterion of a thorough and solid theoretical base for preschool education, an examination must be made which takes into account not only the consequences resulting from insufficient satisfaction of the child's basic biological needs but, in addition, any physical impairment, particularly those of a sensory nature which are linked directly to the learning and ability-to-achieve capabilities of the preschooler.

What is the nature of the learning disabilities of children who do not experience the conditions of the development of behaviors contributing to performance on tests of intelligence?

The purpose of this question is to consider the importance of deprivations in environment by comparing in great detail the exact nature of the deprivating conditions and the resultant learning disabilities accrued by young children reared in such environments.

To what extent do subcultures exist which characterize the deprived conditions relating to the type of inadequate development suggested by the preceding question?

The purpose of this question is to isolate specific populations of people whose conditions of living are clearly detrimental to the healthy development of the young child.

What is the pattern of academic achievement of children who have not been exposed to or have not interacted with the specified environmental processes believed to be related to general intelligence?

The purpose of the question is to examine the relationship of the behaviors thought to be related to intelligence as now measured and the academic abilities of children who for one reason or another have been denied the very experiences needed for the efficient and effective development of these behaviors.

What is the nature and status of existing formal educational programs at this level and what, if any, evidence is available to suggest what impact the programs have on the subsequent advancement in school?

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*Perceptual-cognitive processes include such things as the ability to discriminate forms, colors, etc.; the ability to classify objects on the basis of their intrinsic (i.e., color) as well as functional (i.e., use features).

**Self-concept behaviors include such things as the child's sense of competency and feelings of adequacy, particularly as they relate to school activities.

The purpose of this question is to examine what implications for early education can be derived from the successes and failures of existing institutions of early educational programs for young children.

> *Are there populations of preschool-aged children for whom formal early education programs are required in order that the maximal development of the childrens' capabilities can be realized?*

This question deals with priorities in the education of young children and requires a careful consideration of positive advantages to the general public at large and to the children, in particular.

> *What is the extent and relevancy of present legislation dealing directly or indirectly with the educational process of the very young child?*

The purpose of this question is to examine the extent of control of the education of the preschooler by the Ohio State Department of Education. An examination will be made of the existing laws governing the standards for nursery and day care centers in terms of their relevancy to the educability of the very young child. Also, an examination will be made concerning the status of kindergarten in Ohio. This status will be determined on the basis of its contributory impact on the future academic success of the young child and on the basis of whether or not Ohio is in line with the national trends of kindergarten education.

In our effort to answer these questions, the point of departure will be to examine evidence being collected from research on the disadvantaged as well as the advantaged child. The emphasis will be on the development of the young child's capabilities and subsequent achievement during the early school years. Attempts will be made throughout the report to link the capabilities and achievement to environmental variables and then to compare and contrast the availability of relevant early experience within both groups.

Organization of the Report

One of the best predictors of school success is the intelligence test. Therefore, Section II of the report, Intelligence, will examine the effects of environment on the intelligence of children as now measured. The purpose of the section will be to identify the studies which have been successful in delineating what specific environmental processes appear to be related to the performance of children on tests of intelligence. A modern view of the concept of intelligence will be presented in order to give more meaning to the findings. A further purpose of the section will be to analyze the performances of children on tests of intelligence in order to arrive at a better understanding of the perceptual and cognitive abilities being measured. The tests employed for this purpose are those most widely used: the Merrill-Palmer Scale and the Stanford Binet.

Section III of the report, Perceptual-Cognitive Processes of Young Children, will seek to explore the antecedent conditions affecting the development of perception and will examine with some degree of specificity the cognitive processes involving classificatory skills, formation of concepts, and conserving abilities. The section will place great emphasis on the importance of the sensory-motor activity of the young child to the development of the efficient and effective perceptual processes. It will also integrate the way in which the emergence of preverbal cognitive processes affect the discrimination processes of perception itself. The underlying purpose of this discussion will be to emphasize once again the importance of general experience and motor activity of the child in the development of the perceptual-cognitive processes which relate to the intelligence of preschoolers as now measured.

Section IV of the report is entitled, Language Development in the Preschool Child. The purpose of this section is to demonstrate the inter-relationship of the cognitive processes and the formation of language skills. This will be accomplished by focusing on how the young child acquires a language system and how this language system facilitates thought. Factors related to the acquisition of language will be discussed and, subsequently, the importance of their influence on cognition will be specified.

The general purpose of Sections III and IV will be to elaborate in greater detail the development of the abilities or skills as applied and measured by tests of intelligence having a high correlation with school achievement. If it then becomes possible to draw inferences concerning the kinds of experiences which enhance many of the skills now measured on tests of intelligence, a preschool program could be planned which would have a greater likelihood of developing skills relevant to school achievement.

Section V of the report, The Socialization Skills of Young Children, will emphasize the ways in which children learn to cooperate and relate to each other in play and school activities.

Section VI, The Self-Concept Behavior of Young Children, will emphasize the importance of the child's development of a sense of competence. Here, the focus of attention will be on the home in developing the child's notions of identity as they relate to his own ability to achieve and to be successful. In other words, this section will seek to demonstrate the impact of the parents' involvement with the young child in relation to his achieving behaviors. The emphasis, therefore, clearly rests on components of development which contribute significantly to school success.

Section VII, Nutrition and Learning, will examine the effect of malnutrition on both the ability to learn and to achieve. The purpose of the section will be to underscore the importance of physical well-being as a significant contributing factor to the success of an educational process that seeks to bring about desired changes in the capabilities of children.

Section VIII of the report, Learning Disabilities: The Effects of Environmental Deprivation, focuses attention on what happens to children who are not exposed to many of the environmental features either known or thought to be related to the normal development of perceptual-cognitive and language processes. The purpose of this section is to delineate with some degree of specificity the nature of the learning disabilities (e.g., inadequate language development, low achievement motivation, etc.), and how they are acquired.

Section IX, The Culture and School Achievement, attempts to explore the patterns of school achievement of children who develop disabilities of learning. Particular attention is given to the impact on the child's sense of competence when confronted with school tasks in which he has little preparation for completing successfully.

With this examination, the analysis is complete in terms of meeting our intended criterion of relating the relevance of environmental experiences to later achievement in school. Sections I to VI attempt to explore the environmental features which bring about the development of skills normally sampled by the major tests of intelligence. Because of the relationship between performance on tests of intelligence and success in school, the relevance of the experiences are logically related to the school setting. On the other hand, Sections VIII and IX link the limited achievement of young children to disabilities which accrue as a result of not experiencing environmental features known to be related to success in school.

Section X, Cultures Characterizing Deprivation Conditions of Learning, attempts to document from an anthropological point of view, the premise that there are subcultures that have more than their share of the conditions relating to the development of learning disabilities among young children. These subcultures are then defined – rural white, white inner-city ghetto, and black inner-city ghetto – and the deprivating conditions characterizing these populations are documented.

Section XI, Implications for Education, holds for educating children in the poverty-depressed cultures. The purpose of this section is to suggest what implications for educating children in the poverty-depressed cultures can be derived from the research on learning disabilities and school achievement in the broad areas of school-home relationships, teacher values, and the testing of childrens' progress in school.

Section XII, Organized Programs for Preschoolers, examines the contributions of institutionalized programs such as Head Start, nursery and day care centers and kindergarten to the subsequent achievement of young children. Particular emphasis is given to the degree of success which has accompanied the programs and what has been learned from them in terms of making future efforts more efficient and effective.

Section XIII, Priorities in the Education of Preschoolers, concerns itself with policy decisions concerning kindergarten and prekindergarten programs for the state of Ohio. Specifically, this section will deal with establishing a rationale for deciding what population of children might show the greatest promise for a thoroughly planned and well organized preschool program and why. The "why" is particularly important here and will be derived directly from the documented conditions affecting the normal development of the young child and the extent to which these conditions are available during the course of his development. In addition to defining the populations of children who may benefit most in terms of an organized program of preschool education, Section XIII provides estimates of their total number, together with a regional analysis of where they are located in the state.

Following the discussion, there is a consideration whether kindergarten and prekindergarten programs should be compulsory or permissive at the school-district level in Ohio.

Relevant to the discussion of priorities is the availability of teacher manpower. Accordingly an analysis will be made as to the present picture of supply and demand in grades K through 8.

Section XIV, Preschool Legislation, will focus attention on existing laws or laws being proposed which deal directly with the preschooler. Particular attention will be given to Day Care Legislation and proposed legislation concerning prekindergarten and kindergarten programs. The laws will be interpreted in terms of the extent to which their provisions allow for the establishment of the priorities called for in Section XIII. In addition, an examination will be made concerning the extent to which revisions of the laws (existing or proposed) permit the State Department of Education to exercise advisory leadership concerning the nature of the educational experiences lawfully provided to preschool children. Finally, statistics will be presented which illustrate national trends in the area of kindergarten.

Section XV, Conclusions and Recommendations. The purpose of this section is to recommend a policy for Ohio concerning preschool education. Specifically, the recommendations will list priorities in the area of prekindergarten and kindergarten and suggest guidelines concerning both the nature and duration of experiences which should be made available to preschoolers in a formal educational setting. Finally, recommendations will be made concerning the implications that the guidelines hold for teacher training.

II. INTELLIGENCE

Changes in the Concept of Intelligence

The selection of intelligence as an introductory topic was largely influenced by the recent interest among developmental psychologists in the role of early experience as it relates to the measured intelligence of young children, particularly those from disadvantaged homes. The resulting research activity has brought about several changes in the way intelligence is now viewed and in turn has resulted in many significant implications for the early education of young children. Formerly the concept was that intelligence was a general, fixed entity which characterized an individual throughout his lifetime. It was thought to be fixed by heredity in terms of amount, rate of growth, and patterns of development. Intelligence was viewed as something quantitative whose growth over time involved, merely, the addition of increments to a basic quality or ability. Its emergence was thought to be predetermined in the sense that it simply involved a kind of maturational unfolding, totally determined genetically. Burt (50) reflects this double assumption of predetermined development and fixed intelligence held widely by many psychologists during the era of intelligence-test development in the 1920's and 30's.

> By intelligence, the psychologist understands inborn, all-around, intellectual ability. It is inherited, or at least innate, not due to teaching or training; it is intellectual, not emotional or moral and remains uninfluenced by industry or zeal.

By contrast, the view generally accepted today holds that intelligence is a network of a tightly interrelated set of abilities whose patterns of development depend on and require an active interaction with specific features of the environment. Implicit, also, is the notion that as the child develops and interacts with the environment, the changes in the network of abilities are qualitative as well as quantitative. Qualitative changes are reflected by the manner in which the child organizes his experiences and in the way he uses that organizational mode to cope with and adapt to even newer encounters with his environment.

Consonant with the view of qualitative changes in development is that no distinction is drawn between the motor behavior of the young child and his mental or intellectual processes per se. Stott and Ball (381) characterize this point of view as follows:

> The infant begins to know and cope with his environment through his motor responses to stimulation. His eyes follow a patch of color. He responds to the sound of a person's approaching steps. He kicks and thrashes about with his arms in a random, disorganized manner, bringing his hands in contact with objects within his reach. He grasps, mouths, shakes, and bangs them, and thus 'experiences' them with his various senses. It is quite clear, however, that, in the beginning, these simple, sensorimotor experiences do not involve the awareness of the objects from which the stimulation comes. There could be no central representation of them, as such, at first. But developmental change is rapidly taking place. Soon, with further maturation and experience, the child learns to differentiate objects, and to respond to them as objects as he sees, grasps and tastes them, and hears them fall to the floor. His motor behavior now involves the cognitive awareness of things and persons. His functioning, with respect to them, has become meaningful. All his motor manipulations – eye-hand, fine motor, and gross motor coordinations – appear now to be centrally mediated and are directed toward some kind of adjustment to, or coping with, the environment. In that sense, therefore, they are 'intellectual' in nature. In short, the motor behavior of the young child is mental behavior.

The impact of this point of view has brought psychologists to the realization that the growth of the young child's intelligence as now measured begins very early and requires sufficient opportunities for a very meaningful sensory-motor involvement with the environment.

The more significant outcome of this line of reasoning is the opinion now held widely by psychologists that stimulation from the environment during the very early years, two through five, is crucial to the measured level of intelligence obtained at maturity. Bloom (31), Deutsch (98), Bruner (110) and others have presented findings recently which suggest that the longer a child develops in the absence of a stimulating environment with which to interact, the more difficult it becomes to help the child reach the full potentiality of his mental or intellectual processes. Ausubel (133), however, carefully plays down the notion that the absence of an early stimulating environment implies irreversibility in development here. The problem, as he sees it, is that the child becomes more resistant to positive changes in the environment as he grows older merely because of the disabilities to learn – disabilities that have accrued in the absence of earlier, more beneficial or favorable opportunities.

Finally, the cognitive awareness of things and persons mentioned earlier in the discussion of the sensory-motor activity of the young child implied a concept of motivation clearly excluded in earlier definitions of intelligence. "Motivation" in this context is viewed as a kind of curiosity behavior. That is, the more the child has had opportunities for seeing and hearing, the more he wants to see and hear. (138) It also has a cumulative developmental feature in that the more the child sees and hears, the greater the development of his capacity or capability for seeing and hearing. (415) This latter consideration suggests that part of motivation involves a kind of competency behavior in which the child feels capable of seeking out and exploring new aspects of his immediate surrounding environment and that it is because of that feeling coupled with the desire to learn more about his surroundings that he learns more.

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The most significant aspect of this newer view however, is the promise it holds for the educability of intelligence as now measured, primarily because it requires the very important condition of environmental stimulation to account for and to nurture to maturity the development of the young child's mental and intellectual processes.

In summary, therefore, the concept of intelligence is characterized today by the following features:

- A network of interrelated abilities that have both qualitative and quantitative properties
- A resolution of the dichotomy of motor versus mental behavior of young children
- A meaningful interaction with specific environmental processes, particularly during the very early years of the child's development
- Motivational components of a learned competency and a propensity to learn.

The Educability of Young Children's Intelligence

The remaining part of the section will discuss research findings which call attention to the credibility of the interaction-with-environment property of this new concept of intelligence. The procedure will be to analyze and draw inferences concerning why some children perform better on tests of intelligence than others. The central purpose of the analysis will be to suggest a clear look at the proposed network of abilities property of intelligence, particularly along the qualitative dimension of development.

A more detailed qualifying remark should now be made concerning why the author has chosen to focus on the intelligence of young children as now measured as a first step in the analysis. To avoid any misconceptions, it should be noted at the start that it is not the position of the author to consider changes in the measured level of performance on intelligence tests as a final measure of the effects of an interventional educational program for preschoolers. Nor is it the author's intent to suggest that preschool curriculums themselves should rest specifically on the development of abilities measured by the content of the existing tests of intelligence. Rather, the emphasis on measured levels of intelligence among growing children has three purposes:

- To analyze the types of abilities and skills the tests of general intelligence appear to measure as possible sources of behavior which can be linked to the presence or absence of specific features of the child's environment
- To use this information to establish a rationale for looking more closely into areas such as the development of perception, cognition, language, and motivation and to examine their antecedent conditions, as a basis for establishing theoretical and empirical bases for preschool education
- To demonstrate the importance of the skills basis of the positive substantive relationship between performances on tests of intelligence and later school achievement.

Also, it should be noted that the author is not content with the measure of intelligence that evaluational instruments such as the Stanford Binet and others provide. There is a clear need for a new body of useful normative developmental information on the growth of such things as perceptual-cognitive and language skills against which the effectiveness of preschool work can be measured more adequately. Although the measures, themselves, are absent, a coherent blending of these types of characteristics in children's learning and cognitive development can be of use to help define a theoretical and empirical base for preschool curriculums. It is the considered opinion of the author, therefore, that the best point of departure toward this end is through an analysis of intelligence measures in terms of the three stated purposes.

Cultural Disparities and Performances on Tests of Intelligence

The performance of children from poverty-depressed areas (urban and rural) on intelligence tests has been quite well documented. In general the test scores of children from these homes have been found to be consistently and significantly lower on the average. The differences are present as early as age three. (20, 170, 296, 31) The test scores of these children, also, tend to decrease over the years till at the start of adolescence the mean differences between them and children from more affluent homes is much larger. (31, 202, 73, 165, 87, 220, 70) Studies of this type, however, generally deal with group differences, and all children raised in such environments do not fall below their more advantaged counterparts in terms of their performances on intelligence tests. In fact, a number of recent studies have found and studied poverty-depressed children who are able to perform as well as their more affluent counterparts. (221, 259, 268) The significance of this overlap in the spread of obtained test scores from among children in the two groups is that it suggests that the more visible features of the child's environment such as occupation of the father, source and amount of income, and type of dwelling are not adequate predictors of his performance on tests of intelligence. More importantly, however, is that this overlap has led to a consideration of a more specific set of environmental features, within a given social-class status, which relate more directly to test scores on measures of general intelligence.

Curiously, the evidence supporting the specificity of environmental process variables and their relationships to performances on intelligence tests has come from two separate directions. One such study by Wolf (426) successfully linked the presence of certain features of the environment to the test scores of children from home environments of middle- or upper-class families in medium-sized Midwestern communities. Inferences were made concerning what would happen if the features were not present (i.e., lower performance on intelligence tests), but no evidence was provided. However, other studies conducted by Deutsch and his associates (94) were able to relate the absence of certain environmental features to the test performance of children. The studies also emphasized the notions of duration and intensity of deprivation conditions in the home and found that the longer a child experienced the absence of key environmental features the more pronounced its effect would be on his test performance. An important outgrowth of this research was that it not only supported the importance of environment in relation to test performances of children, but that it specified features of the environment which were critical to that relationship.

A wide variety of environmental features involving the parents' interactions with the child were found. These include:

- Expectations for the child's achievement
- Amount of information about the child's intellectual activities
- Encouragement of the child in the exploration of his world in a wide variety of situations
- Nature of rewards for learning tasks well done
- Aspirations for the child's future.

Several inferences might be drawn here concerning these five features as they appear, generally, to mediate or help develop the child's interest in learning and exploring his environment. It was pointed out earlier that the more the child sees and learns about the environment, the more he wants to see and learn. First, it is possible to draw the inference that parents who expect and encourage this type of behavior on the part of the young child promote it most significantly. Second, a close congruence between the parents' knowledge of the child's intellectual activities and the nature and frequency of rewards for tasks well done can be extremely helpful in stabilizing the very capabilities the child needs and uses in exploring and expanding his knowledge of the environment. It might be possible to infer that a very perceptive and observant parent could be extremely helpful in developing that feeling of competency mentioned earlier. However, even though one might interpret these features as promoting the motivational component of the newer concept of intelligence, we have noted the features themselves do not shed much light on the types and kinds of abilities the child is developing nor how the abilities are related to performances on general intelligence tests.

The physical features of the environment which were related to intelligence appear to be more helpful in this regard. For example, consider the following features:

- Places to study
- Variety of objects available
- Types of learning supplies – books, periodicals, magazines
- Number of children in the home
- Trips to museums, libraries, zoos, etc.

An inference could be drawn immediately that the skills and abilities the child develops appear to be dependent for their development, on the quality of physical surroundings. In other words, the relationship between the kind and quality of the physical features of the environment and the child's performances on tests of intelligence makes sense if one interprets this relationship from an interactionist point of view. Intelligence as now measured does seem, from these studies, to be dependent upon the quality and variety of objects and things which the child encounters.

Finally, another feature of the environment found to be related significantly to the test performance of young children was the quality of language models available to the child. This quality was analyzed along three dimensions, as follows:

- Amount of encouragement in the expressive use of language as a vehicle of communication in the home
- Provisions for expanding and enlarging the child's vocabulary
- Provisions for helping the child achieve a syntactical structural system appropriate to the expression of his language.

It was found that the extent and quality of parental interaction along these three dimensions were significantly related to the child's measured level of intelligence. It is well known that most tests of intelligence are highly verbal and require some symbolic manipulation, and it is safe to assume that the presence or absence of key features of the environment which tend to promote language development, in turn, affects performances on tests of intelligence.

In summary, therefore, studies by Wolf and Deutsch promote quite nicely the motivational and interactional properties of the newer concept of intelligence since they did successfully link specific features of the environment to obtained measured levels of intelligence among children. Accordingly, the probability is quite high that a deprivation of favorable environmental features, particularly those contributed by the parent, do have an impact on intelligence as now measured and account for much of the disparity of performances found between the children from lower-class homes and those from more privileged home environments. This goes a long way in explaining the results of studies which clearly show that moving children from an impoverished environment to an enriched environment substantially increases the childrens' performances on intelligence tests. (356, 358) The most important outgrowth of this type of research activity is that no one today would seriously challenge the premise that the nature of the environmental experiences afforded a growing child holds significant consequences for his performance on tests of intelligence and subsequently his achievement in school.

The most significant aspect of the research on environmental factors as they relate to general intelligence is the implications it holds for the interpretation of intelligence-test performances themselves. That is, intelligence tests, per se, could very well be interpreted as samples of learning based upon opportunities for specific interaction with the environment, and the child's score can be viewed as an indicator of the variety, kind, and quality of experiences to which he was exposed during the course of development.

Intelligence-Test Content and the Early Experience of Young Children

Although the specificity of environmental processes or features and its relationship to intelligence have been investigated with some thoroughness, it is not clear how the features relate to the development of a network of interrelated abilities proposed by the new concept of intelligence. To arrive at a better understanding of this relationship, one must examine, in some detail, the content of preschool intelligence tests and young children's abilities which the tests measure, and one must consider these matters in the light of what is known about environmental processes. In this way one might draw some very critical inferences concerning the impact of environmental features on the development of the abilities measured by tests of intelligence.

For example, items used to test preschoolers for intelligence on the Merrill Palmer Scale and the Stanford Binet generally require children to engage in activities such as the following:

- Building towers with blocks
- Copying circles
- Cutting with scissors
- Placing pegs in a board
- Matching colors
- Ordering objects in space
- Reproducing form patterns and other related activities.

Tasks of this type generally require the child to make use of many perceptual-cognitive skills. For instance, the child at age three has to discriminate visually a variety of forms, displace objects in space, make positioning judgments, and display a refined sense of hand-eye coordination. As the tasks become more complex for children of ages four and five, the successful completion of these tasks is contingent upon abilities involving memory, time-sequence patterns, quick recognition of form and patterns, reproduction of auditorially perceived word patterns, right-left ordering of objects, foresight in the perceptual ordering of objects, and knowledge concerning the abstract as well as the concrete features of objects (i.e., the functions they serve).

It can easily be inferred that the presence or absence of the environmental features previously discussed might affect the development of these kinds of abilities. The development of the cognitive awareness of things and objects noted earlier in the discussion of intelligence requires the existence of these kinds of abilities or skills. Their development, however, is contingent upon the opportunity to interact, i.e., manipulate and have access to a variety of toys, games, colors, form patterns and many other objects of various shapes and sizes.

In addition to the presence or absence of certain physical features, significant interaction with the parent is also related, particularly, as it affects language development. Although the tasks described in these tests are not highly verbal, some of the items do require verbal directions and verbal problem solving such as distinguishing sets of word patterns and reproducing them in appropriate sequences. As the child grows older, however, his performance on tests of intelligence becomes increasingly dependent upon his ability to handle verbal and symbolic materials of a highly abstract nature. If, because of the absence of earlier enriched environmental opportunities, a child fails to achieve some of the basic preverbal skills described here, his ability for abstractive thinking or symbolic manipulation will in turn be affected.

This inference is supported by research findings reported earlier which suggest a widening disparity in performance on intelligence tests between groups of children at different levels of socioeconomic status. This fanning-out effect is thought to occur primarily because the upper- or middle-class children had opportunities for acquiring the basic skills essential to the development of highly abstract thinking whereas, typically, most of the lower-class children did not. That is, there is an absence in the availability of objects (toys, etc.), parental interaction, and quality language models. Tests of intelligence that present abstract content and require skills in the symbolic manipulation of ideas, relations, and things place these children at a disadvantage. The tests are probably not reflecting, as previously suggested, a capacity to learn as much as calling attention to perceptual-cognitive and language skills which have not had the occasion to develop at the preverbal level.

Conclusions and Summary

- The preliminary findings reported in this section and the analysis of the tests of intelligence at the preschool level tend to support the importance of the environmental variables, in general, and the interaction hypothesis, in particular.
- In all tasks on intelligence tests, it is the items involved and the child's responses to them that are recorded, and it is always the child's level of acquired abilities that is available for testing.
- A child who has been deprived of an environment that would stimulate and allow the exercise of basic skills, particularly those of a preverbal nature, may well perform at a relatively low level on tests of this type.
- The low level of performance occurs not necessarily because the child is unable to acquire the skills, but simply because he has not learned to do the things required in the test performances although he might well be able to acquire the necessary skills.
- The network of abilities tested at the preschool ages appears generally to be of perceptual-cognitive preverbal variety, not very well organized, but with a tendency toward increasing the number of items of a more abstract or symbolic nature by age five.
- Many if not most of the behaviors measured by these two tests of intelligence can be reasonably linked to the presence or absence of environmental features, particularly those physical features to which the child is exposed during the course of his development.
- The impact of physical features, as noted earlier, suggests the importance of early and systematic interaction with objects of wide variety of form, color, and size as a necessary condition for the development of preverbal skills needed to perform successfully on the tests of intelligence.

Accordingly, this analysis of intelligence and its measurements suggests that a closer look at the preverbal abilities measured by these tests is needed.

Function of Preschool Education

One function of early education, therefore, would be to maximize the probability of the occurrence of the broad general experiences which promote the development of skills needed for school success by providing them directly to the children in a formal preschool educational program. In order to do this, however, a more detailed analysis of how the skill areas sampled by these tests develop is required. Accordingly, the next two sections of the report will specify in some detail how the child comes to acquire skills measured by tests of intelligence.

III. PERCEPTUAL-COGNITIVE PROCESSES OF YOUNG CHILDREN

Introduction

The discussion on intelligence suggests that many of the preverbal perceptual-cognitive abilities being measured by intelligence tests were the direct result of specific interactions in the environment. The purpose of this section is to examine the research findings which tend to support this view and to suggest in somewhat more detail how the sets of skills mentioned in the analysis of the tests are acquired.

Four basic sets of skills will be discussed in this section as follows: perceptual processes, formation of concepts, classification skills and conserving abilities. The development of the perceptual processes is extremely important for all of the child's knowledge of the external world and the way in which he organizes it, is dependent upon and obtained from his immediate sensory experiences.

The child needs to organize and classify the experiences that nature provides. The first step towards this goal is the formation of concepts such as form, color, and size. The function of such concepts is to allow the child to sort or classify his experiences with objects, things, and events in an efficient and effective way. When concepts are so employed, they reflect the availability of classification skills. Conserving abilities, on the other hand, enable the child to understand the invariant properties of objects such as mass, quantity, volume, etc., as a basic first step toward logical or scientific thinking. These four groups of skills, therefore, provide the child with a more effective means for coping with and adapting to his environment in an intelligent way.

The Development of the Perceptual Processes

Although a child may be born with the tissues for biological intelligence (brain), these become useful to the child only when he moves and acts, explores and manipulates, sees and describes, and makes use of the contents of the world. These experiences are what Getman (155) calls the blocks for cultural intelligence. It is now thought that the child learns all he knows. Very little comes with him at birth except the basic machinery for learning; children must even learn how to learn. The fact that an infant must learn how to walk and talk is fully accepted. It is just as important to recognize that the infant must learn to see, hear, feel, smell, and taste even though the receptive equipment for each activity is present at birth. It is through these perceptual processes that the child learns of his environment and how he needs to function in it.

Perception can occur at two levels: it can come either from the external environment or from the organism internally. External stimuli might be noise, light, or odor, while internal stimuli would be kinesthetic or organ oriented. Other than the internal stimulus of hunger, we will be most concerned with the stimuli that occur in the environment of the individual and how the availability of those stimuli prompts perceptual development; if there is no environmental stimulus, there can be no perception. Further, we will be concerned with the way the motor activity of the child interacts with the environmental stimulus to further the development of the perceptual processes.

The Importance of Sensory Stimulation in the Development of Perceptual Processes

Deprivation studies point up some interesting data with respect to the importance of the availability of the environmental stimulus to the perception development of the child. Hebb's experiments (187) in sensory-deprivation studies using college students as subjects point up some interesting findings. Subjects were deprived of a variety of kinds of stimulation for as long as 3 days. Many experienced hallucinations, and some became so uncomfortable in this situation that they resigned from the experiment. Generally, subjects reported feelings of apathy, low energy, low motivation, and difficulty in concentrating. The implication is that the absence of the constantly varying stimulus environment impaired the subject's ability to be aroused; it resulted in later resistance to sensory input and perceptual activity. An analogy might be drawn to the fact that unused muscles tend to atrophy.

Other studies involve deprivation of particular experiences. For understandable reasons, when the deprivation was experimentally induced, the research was done with animals (except in short-term adult deprivation studies). The human studies took advantage of cultural patterns or accidents which resulted in deprivation.

Riesen (26) who studied chimps reared in the dark from birth and then placed in a normally lighted environment found that the animals were unable to learn visual tasks. He also gives evidence that for pattern vision to develop, there must be early pattern stimulation. Another researchers of visual deprivation, Von Senden (404), studied humans who had had congenital cataracts and had undergone successful surgery to remove them. After the restoration of sight, pattern discrimination was very difficult for the subjects who resorted to such tactics as counting the number of corners to identify a square. The quality known as "object constancy" was also very difficult for them; an automobile would look like an automobile when seen from the ground but would be unrecognizable when viewed from above. Here again, deprivation of early experience resulted in diminution of later functioning. Other visual-deprivation studies provide a case for sensory training before age four. Drever (120) found that those children who became blind before age four had impaired space perception, while those losing sight later had retained this ability.

Motor Involvement and Perceptual Processes

Another dimension of importance is the motor involvement of the child. The early simple games of the child are intended to develop his sense organs and his motor system. The child sometimes carefully and sometimes randomly experiments with things, looking at them, feeling angles, smelling, and tapping to produce sound. These so-called games of experience are the background upon which the young child will begin to build his ideas of the world. By the manipulation of things and of his own body in relation to things, he is perfecting the sensory-motor process and is learning to match sensory data to motor data. This adaptive sensory-motor process which is developed will allow the child to fit his behavior to a variety of situations with which he will be confronted.

An enormous amount of such random experimentation is necessary. (230) The child needs first to try out all the possible muscular responses of which his body is capable in order to find out what his body and its parts can do, and, through this process, the child establishes neurological patterns. He must observe how he can obtain sensory data and learn how his body position can vary his information. Then, he must learn to make the appropriate motor response. The child must also have the opportunity to take things apart and experiment to discover how they function. Perhaps a later step would be the reconstruction of the items. Soviet research, (434) additionally supporting the importance of this kind of motor involvement, found that the processes of perceptual activity are not developed in isolation. Rather, they noted the processes are developed as a result of the subject's practical activity. It appears that perceptual processes develop in connection with the child's increasingly complex motor activity.

Developmental Properties

Getman (155) states that the development of the sensory-motor activity for most children proceeds as follows: general movement patterns for action are the processes by which a child learns to use his head, body, arms, legs, and feet to move about and explore his world. The eyes become useful in steering him about (i.e., visual discrimination). The development of special movement patterns of action is a derivative and an extension of the previous process. The child now learns to use his body parts in unison to control and manipulate the things in his world. Each part or group of body parts with neuromuscular patterns (bone-muscle-nerve involvement) must be developed through use before it can make a contribution to perception. The early, extremely complex activity of hand-eye coordination is a prime contributor to the development of perception.

The next stage involves the development of eye-movement patterns to reduce action. Practice and experience in this process assist the child in learning to use vision to obtain information about his world without the movements previously needed for exploration and manipulation. The hands seem to be less and less involved in manipulations for information and can be said to increasingly use information obtained through vision. This is a stage that would occur in first- or second-grade children, and it is mentioned here in order that the reader will see where the child is going in terms of developmental abilities. Renshaw (318) stated the concept most clearly: "Vision develops under the tutelage of the active touch." Thus, vision serves the child early in his development till the gross body movements become refined. Then motor activity dominates and mediates a more efficient and effective visual-discrimination process.

The Experiences Objects Provide

It is quite possible that solid objects that are tactically distinctive as well as visually distinctive, provide richer stimulus information, because of the built-in redundancy. Stevenson and McBee (378) have compared the differences in learning rate of young children when the stimuli for discrimination were solid objects (cubes), planometric objects (cardboard cutouts), and patterns. The children in the group trained with solid objects performed significantly better than the other two groups. For the most difficult problem in the series, the older children (age six) were able to learn with both solid and planometric stimuli, but not at all with painted patterns. It is important for our purposes that this particular problem was too difficult for the younger group. Why were the solid objects more effective for learning the discrimination tasks? One interpretation is that solid objects provide more redundancy of stimulus information than the other two sets of stimulus materials because the children both handled the stimuli and looked at them. Whatever the reasons, we must view this information as an important key in considering the kinds of tools and materials that are developed for use with young children. It would seem that traditional workbooks and pictures of objects would not be nearly as useful in helping the child discriminate the features of objects as would a three-dimensional form. Rather than looking at pictures of animals, a preschool child might gain much greater understanding of what the animal is by working with a strong motor-laden task such as building or painting a papier-maché or clay representation.

The Necessity of Experience

Clinical research now provides evidence that a child's ability to discriminate differences in sounds (tones, noises, etc.) and his ability to produce more acceptable speech sounds are closely related to his ability to integrate the special movement patterns of the visual-tactical mechanisms. It is precisely at this stage that we find the preschool child – learning to adapt himself to the vast world of experiences. The findings of Koltsova (374) corroborate evidence suggesting this trend in development. She found that classificatory concept labeling is learned more readily when accompanied by conditioning in tactile, visual, auditory, and kinesthetic areas than when learned on a verbal or tactile level alone. Zinchenko and Ruzskaya (436) show that, where an adequate perceptive image in small children cannot be created by means of visual and tactile acquaintance with an object, such an image can be formed in the course of practical manipulations with the object.

Although we see random experimentation with solid objects for the child as being necessary for the development of perceptual processes and fixing labels to objects, it becomes more and more difficult in our present everyday life for the child to [illegible] this. First, because the child is now surrounded by complicated gadgets and equipment, he is seldom allowed to manipulate and explore his environment. Second, because the technical things are so complex, if the child succeeded in taking them apart it is doubtful that he could gain much understanding about how they work. Physical danger is another aspect to the restrictions that today's children face. A child in a modern apartment or a crowded city home cannot run at will. These conditions tend to depress the opportunities for the kinds of sensory-motor activities needed in the development of the perceptual processes.

The Motor Development of Young Children

Knowledge of motor development is needed to match the practical activity that the child's motor skills can entertain in order to better affect the development of the perceptual processes. Thompson* and McCandless** note the following developmental trends. The child when faced with a new task reacts to that task with a number of general, gross body movements and gradually moves to more specific patterns of movement. The child also first uses large-muscle groups and with maturation gains control over the small-muscle groups. Another trend to be noted is the cephalo-caudal; muscle control and coordination begins at head and moves to the foot in an orderly fashion. In addition, growth in motor skills seems to be proximodistal; development proceeds from the axis of the body outward to the periphery. These latter two trends describe primarily the first 2 years of life. Early motor development is also marked by its bilaterality; the child first uses both arms, both legs, etc., and with increasing age begins to be able to use only one arm, hand, or whatever independently of the other. The child in his early actions also uses a large number of muscles and then gradually a smaller number, differentiating their use to the task involved. It has also been found that development in motor skills follows an orderly sequence. Shirley (350) found that each stage of development was a prerequisite for the immediately following stage. However, deviations are found with the individual child who can skip a stage so that the sequence of development cannot be said to be rigid in its structure. (15) Finally, McCandless*** points out that the child will abandon skills he does not use and continue to refine those skills he does use, thereby developing an increasing level of adroitness in his actions.

The Infant

Postural-Locomotor Abilities. The infant child develops in motor skills in two primary areas: as noted earlier, he begins to be able to move his body in relation to objects (locomotion) and he begins to use his body, specifically his hands, to move other objects (prehension). Development in locomotion follows the trends described above. The child first undertakes antigravity movements by lifting his head, arms, and eventually his torso, following the cephalo-caudal pattern. Next he begins to move in prone progression according to three stages, as described by Burnside (49): crawling, creeping, and hitching (locomotion in a sitting posture). Next the child develops his skill to walk, which progresses to a deliberate stepping movement, then heel-toe progression, and finally into the integration of movements that is walking. As the child grows older his precision in walking increases with developing length, width, and variability of step. Once the child has begun to walk erect, his hands and arms are free to do more-advanced manipulation activity.

Reaching, Grasping and Manual Manipulation. Before the child walks, however, he shows advances in manual manipulation which follow the mass-to-specific trend. He first begins to grasp objects, until finally he opposes thumb and finger which allows him to perform finer manipulative tasks.

There are various theories of why a child turns out to be right-handed or left-handed. Included in these are the cerebral-dominance theory and theories on the influence of genetic, social, and intelligence factors, none of which have been established unequivocally as the cause of handedness. In any case, by the time the child is 2 years of age he has shown fairly well his handedness preference. Also, according to Munn*, the 2-year-old child has developed quite a variety of motor skills. He runs, piles six blocks, imitates vertical and horizontal strokes; tries to make a circle, nests four boxes, places blocks in a row, points to an object on a card, creases paper in imitation, and unwraps paper from candy. McCandless* gives the following landmarks concerning the development up to and including 3 years of age; hand control, torso control, rolling over, sitting alone, creeping, standing, walking, running, tricycling, and thumb-finger opposition. With the acquisition of each skill, the child continues to widen his perceptual field. He is able to see more, to contact what he sees and to manipulate what he sees.

Development of Motor Skills During Later Childhood

Speed and Strength. Speed of response has been shown to be highly correlated to chronological age; the older the child, the faster the speed with which he reacts. The upper limit of speed is probably reached in later childhood. (287)

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*Reference (390), pages 225-230.

**Reference (269), pages 378-380.

***Reference (269), page 379.

*Reference (287), page 316.

**Reference (269), page 414.

Motor Coordination and Skills. Jones (218) has found five stages in the development of the use of wheel toys as follows: discontinuous play at 21 months, attention to separate parts of the toy at 24 months, improved skill at 26 months, merging of skills at 36 months, and continuous imaginative play at 48 months. Gutteridge (175) in a study of 1973 children has found several norms for development in motor skills. He found that at 3 years 50 percent of the children could climb well and that at 6 years 92 percent could. Approximately 42 percent of 3-year olds were proficient in jumping and 81 percent were at age 5. Nearly 17 percent of the children could tricycle at age 2, and by age 4 all children could. Finally, in ball-throwing, 20 percent of the children at age 4 were proficient, and by the time they were 5-1/2 years old, 74 percent of the children were skillful. In writing skills, Townsend (394) found that copying geometric figures was more related to perceiving and discriminating between forms than to motor abilities as such. As can be seen, a child's ability to perform a motor task increases in proficiency with age.

Factors Influencing Development

While development in motor skills is primarily a function of maturation during infancy, the integration during later years of the basic skills acquired at the infancy stage is dependent upon environmental influences. Munn* characterizes the process as follows: development of locomotion depends directly upon assumption of control of muscles by the growing cerebral cortex and the growth of the cerebellum. General environmental conditions and amount of exercise have little to do with the appearance of the child's ability to walk. However, in beginning to walk the child must rely on the following sensory cues: tactile cues transmitted by the feet; kinesthetic cues from movements of muscles, tendons and joints; and visual cues that indicate direction. It has been found that blind children, who do not receive visual stimulation, are significantly retarded in beginning to walk. Furthermore, they are inhibited by earlier injuries they may have received when they first tried to stand or walk. Even at this early stage in motor development, the amount of stimulation provided by the environment is seen to be a factor in motivating the child to progress.

Similarly, in the development of prehensile behavior, while maturation of neuromuscular coordination plays an important role, visual and tactile stimulation are significant. McGraw (273) finds six phases in the development of prehensile behavior: passive phase, no evidence of object vision; object-vision phase, convergence and accommodation are elicited by an object but no hand movement is associated with it; visual-motor phase, arm and digit movement appear to be reflexly aroused by visual stimulation; deliberate-manipulative-movement phase, object is continually fixated; visual-release phase, look at object and start reaching movement; final phase, reduction of muscular and visual activities to a level required for reaching and grasping. These phases clearly illustrate the necessity of objects for visual stimulation to elicit grasping and reaching behavior. Finally, however, thumb-finger opposition, perhaps the most important single manipulative skill, appear, according to Halverson (177), to be a product of both maturation and learning. Handedness is seen to be learned depending on training, the task involved, and social pressures on the child to be right-handed.*

According to the norms as established by Jones and by Gutteridge in the use of wheel toys, climbing, jumping, tricycling and ball-throwing, growth depends on the child's level of neural-muscular maturity. In addition, the child must have attained a certain weight and height, and he must have been allowed to observe the play activities of other children. Furthermore, these skills depend on the kinds of equipment available for the child to use and the kinds of experiences he has had at home. Overall environment is seen to have a large effect on the development of motor skills after the age of two. If a child is restricted in his opportunities to experiment with and integrate his motor skills, he will remain underdeveloped. (218, 175) In a study by Williams and Scott (419) lower-class black children were found to be more advanced in motor-skill development than middle-class black children – probably because of the more permissive and less exacting conditions in the lower-class home. At the same time, however, the lower-class home has a paucity of play equipment for the child so that he may not match the middle-class child in specific types of motor skills. Nevertheless, some motor skills depend little on the amount of practice, and practice is of help only when the required maturational level has been reached and the child is sufficiently motivated to act.

As we have previously noted, a child's later development in writing depends largely upon his ability to discriminate between forms and then upon his level of motor skills. (394) Motor functions also depend on certain patterns of physical development such as amount of weight gain or loss, growth in the lower extremities, and shifts in the center of gravity; however, more research is needed in this area to determine the extent of dependence on physical growth. (390)

In summary, it is apparent that development of basic motor skills is primarily a function of maturation although sensory cues and practice are also necessary. Development after 2 years of age depends on a number of variables, including perception, physical growth, and environment. The latter has the most influence on level of proficiency in specific types of motor skills and opportunities for practical manipulative activity.

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*Reference (287), pages 317-326.

*Reference (269), page 414.

Cognition and Its Relationship to the Perceptual Processes

Wohlwill (423) has provided some ingredients that extend the relationship between the sensory-motor activities of the child and his perceptual development and provide a systematic framework which focuses on the continual interplay between perception and the cognitive processes (e.g., concept formation, classification skills, etc.) of the young child. He suggests three dimensions along which perception and cognition can be related: redundancy, selectivity, and contiguity.

Redundancy

As the child grows older, he not only needs less redundancy in the display and frequency of a certain type of sensory information, but also stores enough information about the features of an object that he can recognize what the object is and its shape on the basis of partial cues. Thus, according to Wohlwill, the dimension of redundancy appears to run a course of a decreasing perceptual dependency on the frequency of sensory data of a certain type about objects or things towards an increasing dependence on a memory function. This is a function in which the identification of objects and things are mediated by a kind of cognitive activity which helps the child remember. The increasing reliance on memory capability and the decreasing reliance on perceptual cues is thought to characterize the young child's development and occurs as a result of an interplay between maturation and learning.

Selectivity

The dimension of selectivity bears light on the difficulty a young child has in his ability to disassociate relevant from irrelevant information at the perceptual level. One of the most dramatic of the major developmental changes of the young child is the development of the cognitive processes which allow the child to select and abstract relevant information from the environment in a systematic and efficient manner. The characterization of the child's development here is that his notions and ideas about the world remain invariant even in the face of some rather distorted perceptual experiences. At the beginning, however, the young child cannot accomplish this act; and until he has the opportunity to develop cognitive classificatory functions, he cannot deal adequately with the bombardment of experiences which he encounters daily.

Contiguity

The third dimension that Wohlwill proposes concerns that of contiguity. Here the spatial and temporal factors affecting sensory experiences play an important role in the perceptual life of the child. Stimulus information which is widely separated in space or time is difficult for a child to handle. Concerning this point, Wohlwill noted, however, that reviews of the literature on perceptual development do suggest that as the child develops he increases his ability or tendency to relate objects in the stimulus field independently of their spatial or temporal contiguity.

In summary, therefore, the child's development is characterized by the following:

- The emergence of memory which replaces the need for redundancy of sensory experiences

- Cognitive processes (e.g., concepts, classificatory skills, etc.) which provide for a more efficient and effective pattern of discriminating the features of objects and things

- The development of time and space concepts which permit the child to draw relationships of objects independently of their spatial or temporal contiguity.

Wohlwill states:

> It is of no little significance that errorless perceptual discriminations of length, size constancy, and number in the growing young child appear to develop in close interdependence with the gradual developments of concepts which tend to help mediate accurate discrimination of these more abstract features of objects.

Relevance to Educational Planning

The relevance of these dimensions for educational planning, is to assure that the growing child is provided a systematically organized program for helping him remember, discriminate, and generalize his notions about the world of objects and things by carefully permitting the blending of his perceptual products with a more highly refined and more accurate accounting of his world of objects and things via the more-advanced cognitive skills.

Several implications for educational planning can be drawn concerning the way the growing child comes to interact with objects or things. Early in the educational experience of the child, simple objects of different shapes, forms, and clear distinctive features should be made available and presented to the child. There must not be an overloading of multiple characteristics, for the child is at a preconcept stage and will be unable to incorporate a variety of characteristics into a simple classification. In addition, an understanding of objects should not be contingent upon concepts of time and spatial relations. The child must also be given many opportunities to interact repeatedly with the objects at the very early stages of perceptual development.

During the selectivity dimension, an active effort should be made to help the child develop concepts of objects such as form, color, and size in order to facilitate or mediate a more accurate perceptual sense of discrimination and a more accurate selection of relevant features of objectives.

In summary, therefore, we see that there is a theoretical frame of reference which reveals the cognitive processes as they relate to the child's perceptual interaction with objects and things. Moreover, we see how these processes tend to increase favorably the child's perceptual accuracy in discerning the nature of his world and how they tend to decrease errors of perceptual judgment about his world of objects and things.

The Formation of Concepts in Young Children

During the time the child is developing the perceptual processes through sensory-motor experiences, he begins to develop concepts with which to organize his sensory experiences. Regarding this point Sigel* states:

> Sounds, lights, textures, shapes are among the innumerable sources of stimulation consistently impinging on our senses. For us, as adults, diversity is neither distressing nor chaotic, for we have created order out of the seeming disorder. Having acquired this order, we are able to move about our environment with considerable accuracy and security. By learning to behave appropriately toward the many objects, events, and people with whom we come in contact, we adapt and function in our environment with the necessary precision and confidence.

Sigel further proposes that the major reason the child learns to cope with his environment more efficiently is that he is able to develop a system of concepts which permit a systematic and efficient way of selecting and organizing the sensory data (i.e., the dimension of selectivity). Concepts are learned through experience and are employed to form classes or categories, but their main function is to help the child identify and classify sensory data.

The following paragraphs discuss the way in which concepts develop, the environmental conditions surrounding their development, and the types of concepts which characterize the child through the course of early development.

Object Permanence

The child first has to learn to recognize and identify objects. This normally occurs during the sensory-motor period in which his sensory-motor activities help him to learn that objects and things have a stability and are different one from another. Soon he learns to distinguish not only the object itself but the features which define it.

Sigel* notes that Piaget and Wallach point out the world of the child is egocentric and that initially, an object is viewed by the child as an extension of himself. (321) At approximately 2 years of age, if the child has had appropriate sensory-motor experiences, he begins to conceptualize the objects in his world as having substance, as taking up space, and as being permanent. It is at this point that Wohlwill's redundancy dimension becomes relevant because it is during this stage that the child is able to remember the object on the basis of its parts. That is, the identification of a part or particular feature of, say, the leg of a doll is adequate for the child to know what the whole object is. The last stage of object permanence is characterized by a child's awareness that an object could be in any number of places and still exist in the form that he knows it to be.

Space

In line with the development of object permanence is the acquisition of spatial concepts. Piaget (304) theorizes that the infant's earliest ideas are that there are many kinds of spaces, each of which depends on where the child happens to be standing. A series of stages of experience follows in which he learns to comprehend a single objective space that encompasses objects, persons, and events. As the child searches for objects, he is able to perceive the spatial relationships between himself and the place of the objects. If an object is behind the screen, he distinguishes between it and the screen, or if it is under a pillow, he makes a similar distinction.

Thus, the child is beginning to show an awareness of very primitive concepts of a distance perspective and thereby maintains a certain notion of constancy concerning the size of the object. Subsequently the child shows an increase in his understanding of the relationship among the objects in space. He begins to stack objects, put them into containers, etc. Sigel** points out that both the concepts of space and object permanence are closely interrelated because of the child's continual differentiation not only of spaces, per se, but of the objects in the spaces. (31) Moreover, the child begins to separate himself from objects and realizes that he, too, is an object in space.

Meyer (276), postulates three developmental stages in spatial concepts as follows: up to about 2-1/2 years the child responds to what Piaget has called practical space, in which objects are present only to satisfy his needs; between 3 and 4 years of age the child responds to a subjective or empirical space, showing interest in the objects themselves but he is still preoccupied with his own activities, though adjusting his activities, to spatial materials; after 4 years of age the child responds to objective space, considering himself as one object among many and attempting to adjust his behavior to the relative positions of all available objects.

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*Reference (321), page 209.

*Reference (321), page 224.

**Reference (321), page 226.

There is some evidence that spatial relations continue to be coordinated to the human body even into the elementary school years. Michael, Zimmerman, and Guilford (277) found that older children understand the elements in a spatial pattern largely on the basis of reference to their own bodies (right and left, high and low, and so forth).

Piaget (150) categorizes the concept of space in three ways: topological, projective, and Euclidian space. Topological space refers to such things as order, enclosure, and continuity. Projective space refers to the perceptually invariant features of the object when the point from which it is viewed changes. Euclidian space deals with such concepts as angularity, rectangularity, and parallelism. He notes that topological properties are distinguished rather early in life, or at about the age of the preschooler. Projective and Euclidian space concepts usually occur much later in the development of the child.

In support of these hypotheses, Sigel* describes a situation in which Piaget tested them:

> In one experiment, the child was seated in front of a screen behind which were objects. He could handle the objects through an opening in the screen but could not see them. He was asked to match the objects behind the screen with duplicates which were visible. In a second experiment, the child was asked to draw pictures of the unseen objects after handling them. It was found that between the ages of three and four the child was able to discriminate objects in his drawings mainly on the basis of the topological characteristics. He was able to identify objects that were open compared to those that were closed. The ability to discriminate between curvilinear and rectilinear forms occurred later. Piaget concluded that the child of 3 or 4 years can readily distinguish an open from a closed circle, but is unable to discriminate between the closed circle and closed rectilinear figures such as squares. The implication of these cross-sectional studies is that the child passes through a sequential order in his acquisition of these space concepts.

It is important to note, however, that the development of a conception of space is more than a visual perceptual; it is a cognitive activity resulting from manipulative actions of the child in space itself. Flavell (150) states

> Adult representation of space ... results from active manipulations of the spatial environment by the perceptual apparatus. For example, we eventually come to "see" objects as together or separated in space, much less as a function of past visual enregistrations of their proximity or separation than from past actions of placing objects together and separating them.

Related to spatial concepts is the ability of children to respond to relationships between objects in space. Leuba (247), in a study of spatial concepts, describes the following experiment:

> . . . twenty-one preschool-aged children were asked to locate a particular pill box in a series. The children saw the experimenter place a piece of chocolate in a box and arrange it in a line, a circle, a square, or a triangle with five to twenty other boxes. The child was permitted to eat the candy if after 1 minute he could select the correct box on the first trial. It was found that children of all ages were most successful when the goal box was placed at the end of a series, at the apex of a triangle, or some other position for which position concepts are most easily established. The fewer the elements in the configuration, the greater the children's degree of success. Some children pleaded with the experimenter, "Please put the chocolate at one of the ends." Only one of the children mentioned counting as a basis of choice. Most of the children, however, seemed to respond on a "general region" basis, demonstrating that a general position concept was being used at these age levels.

Smith (369), in an extension of the Leuba study, found that children begin to develop a directional-orientation concept during the preschool years.

Form

Form is one of the most salient features of objects, and since it serves as a basis for discriminating objects in spaces as well as for distinguishing the differences between objects, it has received a great deal of attention. Thompson* notes that several investigators have found that form discriminations are among the first, if not the first, made by the growing child. For instance, Fantz demonstrated that persistent preferences for visual patterns were made as early as the first 2 months. He presented the infants with separate patterns containing horizontal strips and concentric circles. He found that pattern preferences tend toward a preference for complexity. Ling presented two or more blocks differing in shape (i.e., circle, cross, triangle, and others) to infants between 6 and 15 months of age. Discrimination of the forms was found to be present as early as the sixth month of life. In fact, infants were able to differentiate triangularity and circularity from other forms, even when the form varied in size and color. On the basis of this study and others, the infant at the age of 6 months appears to have some concept of form that is independent of absolute size. Thompson further reports that other investigators, Long and Skeels, have found that relative position or size seems to have very little effect on form-discrimination performances of children.

It is during the sensory-motor period that a consistent and rapid development occurs in which the infant is learning to make refined and precise judgments, such as reaching for and identifying objects visually and physically. A child can also identify forms even when the background content within which he sees the form changes. This ability characterizes his concept of object constancy. That is, the features of the object do not change because of changes in the surrounding background in which the object is placed. Thus, in the early years, children are able to acquire concepts of object constancy as well as object permanency.

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*Reference (321), page 227.

*Reference (390), pages 320-324.

The degree to which a child can generalize form concepts has not been thoroughly researched. The evidence which has been collected by Long (253) suggests the younger child does experience some difficulty here. Most results indicate that the child can distinguish form quite readily, but that the preschooler has some difficulty conserving the sameness of objects (knowing the form of the object remains the same) when the object itself is placed upside down or on its side. Thus, object constancy is a function of the child's ability to conserve both in the face of changes in the background and in the way the object itself is placed.

Color

It is also true that children are able to discriminate color early. Sigel* reports that many investigators have found that, by age four, approximately 90 percent of the children can match basic colors and that 80 percent can name them. Such discrimination also appears prior to any verbalizations about color. In the drawings of children between 4 and 8 years of age, Hurlock and Thomas (203) found a steady increase in the ability to perceive and use color correctly. Smith (365) also found that color discrimination increases steadily until an age between 20 and 30 years, after which it slowly declines. At all ages, discrimination of hue and saturation is more highly developed than that of brightness.

There is evidence that discriminations are made more on the basis of color at some developmental levels and more on the basis of form at others. Very young children (21 months) evidently perform matching tasks on the basis of form, not color. Brian and Goodenough (40) suggest that color provides the basis for separating things into broad categories (genus classification). They found that children aged 3 to 6 years prefer to discriminate on the basis of color rather than form. There is wide agreement that, for children between the ages three to six, color dominance increases for awhile and then begins to decline till, by age six, form dominance again prevails and increases until maturity.

There may be a reason for the preference of color over form during the ages three through six. In making early differentiations and classifications, structure (form) and function are of primary importance, and color can usually be ignored. After the child has developed some facility in making the form judgments, he then makes use of color concepts to further classify objects. In other words, a cow is a cow regardless of what color it is. Later the child perceives a red cow as being quite a different animal from a black cow. At approximately age six, however, there is a gradual shift back to form.

Size

Size is a less salient organization than color or form for the very young child. This is largely attributed to the fact that the size of an object is relative to an external measure or to other objects, whereas color and form are judged by intrinsic attributes. Thrum (392), working with subjects of ages two to five, found that this age group of children has difficulty working with size concepts. She found the most difficult concept for children to select correctly was middle-sized; the next most difficult was biggest and the easiest was littlest. It appears that the child cannot conserve size – that is, the child is not able to tell that the size of an object remains invariant independently of its relationship to objects which are larger, smaller, or of differing distances from the observer. Also, it appears that the concept of relativity is not well established since he has difficulty relating bigness, etc., of an object in terms of its relation to other objects of varying sizes.

Related to the size concept is the ability of the child to respond to positioning relationships between objects and things. Miller (279) found that young children have difficulty ordering objects in the environment because of the lack of the concept of middleness. It is not until about the age of seven that the ability to form a generalized concept of middleness is acquired. (169)

Hicks and Stewart (197) employed ten children in the age groups of 2, 3, 4, and 5 years to investigate the ability of children of different ages to learn to select the middle sized of three boxes. The children were motivated to select the middle-sized box by the experimenters always placing a small toy under it. After the child has learned to choose the middle-sized box choice, he was then presented with a new series of three boxes in which the largest box of the previous series was dropped and a new smallest box added. Those thirty-one children who were able to learn the first series (15 consecutive trials with successes) were able to apply the concept of middle-sizedness to the succeeding series. Only one of the 2-year-old children was able to complete the training series. It is interesting that the successful subjects confused the middle-sized with the largest box twice as often as they confused the middle-sized with the smallest box.

It may well be that relative-size concepts have similar prerequisites to relative positioning, e.g., middleness. The child must be able to abstract the size and see its relativity (which requires the ability to conserve and relate).

Time

The ability to conceptualize and use the formal dimensions of time in dealing with objects develops slowly for the child, and research in this area has not been extensive. Although research has demonstrated that infants make responses to feeding schedules in regular intervals, there is little evidence that they are aware of time intervals; they are quite possibly conditioned by internal sensory cues. In fact, other researchers (162) have demonstrated that standard time concepts related to the estimation of very short intervals appear rather abruptly at approximately 8 years of age. There appears to be a developmental sequence which emerges in the young child. In a study by Ames (6), with children ranging from 1-1/2 to 4 years of age, the following trends were noted in the verbalization of the children: words indicating the present occur first, words about the future next, and finally words about the past. Ames states, "Thus 'today' (24 months) precedes 'tomorrow' (30 months), which in turn precedes 'yesterday' (36 months)".

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*Reference (321), page 230.

In an investigation by Friedman (152), primary children were asked questions related to time concepts: "Tell something that happened a long time ago" and "a short time ago". It was generally found that responses were more adequate with a short time ago than they were to a long time ago.

These findings suggest an interplay between verbalization, memory and time which confounds the study of time-concept formation itself. The child's notion of time may be preverbal, but his tendency to remain in the present may be a function of the lack of language skills for mediating memory or recall of events.

Seriation

Seriation is the ordering of objects based on similar attributes. In the discussion of size concepts and positioning, we noted that the child had difficulty relating to a seriation of objects from largest to smallest, and in positioning, middleness was a problem. Elkind (250) sees seriation as having three distinct stages. In the first stage the child cannot discern the parts from the whole. In the second step, or at approximately age five, he begins to understand a concept of order or that things can occur in a sequence but that there is no reversibility (i.e., smallest to larger, but not the other way around). There is much trial and error at this stage but he obtains an understanding provided that the ordered materials are perceptually present. By ages six to seven the child can make a mental progression of order and does not rely on concrete experiences.

Numeration

This concept concerns the application of numerals to a set of objects which are simultaneously classified and ordered. At age four the child does little more than imitate the sounds of numbers. He is not aware that numbers can represent things, although he may be able to count. In stage two, at about age five, he knows that numbers can be classifiers of things, but he is unable to order and number simultaneously. At ages six and seven, the occurrence of counting behavior implies an understanding of classification and ordering simultaneously. Thus the concept of numeration is obtained. (252)

Classification Skills

Once the child has developed concepts, it then becomes possible for him to use the concepts to group and sort objects on the basis of their physical and abstract features. Earlier we noted that there is a close interrelationship between the development of object constancy and space, but more importantly, we saw that interaction with objects and things in the environment is a necessary condition for the development of all of the concepts. The motor involvement was essential and was limited only in terms of development from gross bodily movements to finer hand-eye coordinations. Another important condition noted was the availability of stimuli to help develop the capabilities of sight, hearing, feel, smell, and taste. We also noted that the child develops certain concepts such as form and color. Size and the more abstract concepts of time, seriation, and numeration are difficult for the preschooler to develop, but some eventually do develop them.

The development of the child's classification skills generally reflects this past experience and falls into the following pattern: learning to form one class (45, 254), to change the criteria for categorization (186, 254), and to compare the size and content of the things or objects which have been grouped and sorted (117, 302).

A great variety of ways to classify or sort objects on the basis of concepts has been viewed in the literature. They can be best understood when grouped under the broad topics of resemblance sorting and functional sorting.

Resemblance Classification

Resemblance classification is a method of sorting objects which contains within it all the ways to compare objects having at least one common sensory property. Within this type of sorting, the preschool child would make use of such concepts as color, shape, material, and – to some extent – size and number.

Shape sorting, which is sometimes referred to as form sorting, is the first concept that a child uses to sort objects. Shape can refer to the geometric shape, to edge matching, or to a specified part of an object. Here we might sort all balls together, all cards with triangles on them, or a square and a triangle grouped on the observation that they both had angles.

Color sorting develops after the child learns to sort on the basis of form. This developmental trend in sorting parallels quite nicely the sequential development of form and color concepts. Some examples of color sorting would pair a green frog and a green vegetable, a red flower and a red crayon, a blue car and a blue hat.

Material sorting is not so easy as simple shape and color sorting. The child needs to have some background of experiences with texture and tactile discrimination on which to base his judgment. An example of material sorting is seen when a dress and a towel are found to be in the same class because both are made of cotton or when a baseball bat and a pencil are grouped.

Size as a criteria for grouping is progressively difficult for the preschool child. It requires that the child use as a basis of comparison a concept of relativity which, as noted earlier, is not a concept easily acquired by the preschooler.

Number as an item for classification also develops later for the preschooler. An example of using number as a method for ordering items would be the placing of three balls into a group. Number can also be employed for grouping heterogeneous objects, although this is difficult for the child.

Functional Classification

It is during the preschool period of development that a gradual shift occurs – away from the resemblance function of classification, in which objects and things are sorted on the basis of one sensory property, to the ability to classify objects on the basis of abstract features such as the function of the object. In addition, there also occurs an increasing use of language to facilitate a more economical classification scheme via symbols to represent both the physical and functional features of the objects being classified.

This second type of classification, therefore, implies that the preschooler has functional concept in the sorting and categorization of objects and things. Functional classification, here, refers to such things as the child's ability to group objects and things together because of the relationship between them. For instance, paper and pencil would be grouped together because of the implied relationship between them. Another type of classification which implies the awareness of a functional concept would permit grouping by similar use. Using this classification skill, such things might be matched as follows: pen and typewriter, clock and calendar, eye and ear, match and lighter. Both classification skills imply that the child can learn what the function of certain objects are. Most preschoolers can use this concept for objects with which they are familiar (i.e., they have had some experience in manipulating the object) and whose function is one with which the child has had some repeated experience (e.g., recognizes that a spoon is used to eat ice cream).

The Dynamics of Classification Logic

A more detailed explanation of the steps by which children learn classification logic is offered by Inhelder and Piaget. (207) They contend that classification begins when the child groups two objects that are equivalent because they look alike in some way (e.g., shape, form, color, etc.). Slowly the child begins to extend the scope of his grouping from two, to more than two objects or things. He then moves to the point where he can conceptualize that all objects can be considered equivalent in some respect (i.e., all objects have a shape or all objects have color).

Experience in constructing one class at a time prepares the child to recognize that objects do not belong exclusively to separate and different categories. He then actively tries out different groupings of objects (207), choosing first one and then another, using a single attribute as the criteria for grouping. At this point he is unable to combine them to form a higher class. This is strictly a horizontal classification skill. Thus, he can shift criteria for grouping the same objects and things but only on a single dimension. When children begin to recognize that objects and things can belong to more than one class, they begin to describe the way in which the classes overlap by using terms like "some" or "all". Here lies the importance of language. It helps the child in the construction of classes via labeling the features of the objects being classified and describing the extent of their inclusion in a given class by a single feature of the objects.

As his classification abilities develop, he selects single features of objects and then classifies the objects using multiple criteria (i.e., color-form combinations). The preschooler begins to have difficulty in learning to perform this type of task, however. Once he accomplishes this skill, though, the child can then experiment with the complementary processes of joining subclasses to form a higher order class or dividing a higher order class into separate subclasses. Constructing a higher order class from subclasses involves finding some common feature shared by the groups that allow them to be grouped together at a higher level. By focusing on the common properties between subclasses in order to form a higher order class, the child soon learns to recognize the logical relationship between the two levels of classification. It appears that this logical operation must be mastered first before a child can group higher order classes that can be broken down to the subclasses which define it. To do this, the child must be able to discriminate the attributes which distinguish the subclasses from each other and from the higher order class. This emphasis on the child's ability to distinguish properties and thereby to separate subclasses tends, by the very nature of the task, to depress his ability to handle the concept of sameness among objects in forming a higher class. The child advisedly needs training in the grouping on sameness criteria to a higher abstract level prior to learning to subdivide classes and then to rejoin them.

Thus, there appear to be distinct stages in the development of classificatory logic for the growing child. Research by Kofsky (251) indicates that several of the stages for learning the skills fall well within the preschool child's capacity to acquire. Children are able to group and match objects on the basis of form, color, and function (i.e., the use of the objects or things). They are also beginning to use size and number, although this takes much training and probably does not occur till around age five, at the earliest. They can learn that groups of objects can share common features (i.e., all objects are considered equivalent in some respects). Five-year-olds can learn the concepts of some and all as they relate to an understanding that objects do not belong exclusively to separate and different categories (i.e., groupings of objects first on the basis of one attribute and then on the basis of another).

As noted earlier, preschool children, however, have difficulty classifying objects using more than one criterion, a skill which is a necessary condition for understanding the complementary processes of joining subclasses with distinctive features to form a higher order class and then for dividing a higher order class into subclasses.

The Conserving Abilities of Children

There has been considerable discussion concerning the notion that a child can be taught a principle or concept at any age. This position has been advanced by Bruner (44) very eloquently. Considerable research suggests that Bruner's theory is faulty, particularly in the area of what Piaget (150) labels as conservation skills. This has implications for the education of the preschooler because we do not want to try to teach the child concepts which may fall outside of his capacity to acquire. Consider, for example, the following study dealing with the ability to conserve.

> Karen is a 5-year-old preschooler. She is alert, communicative, and interested in what is before her. The teacher has just filled transparent plastic Containers A and B with orange juice. Both containers are the same size and have been filled with the same amount of orange juice. The child readily admits that both A and B are the same size and that the amounts of juice in them are the same. The teacher then picks up Container B and pours the contents into a taller, more slender Container C. Nothing else is added so that we know that the amount of juice in the taller Container C is identical with the amount in the unemptied Container A. We now ask Karen if the amount in A is the same as the amount of juice in C. Astonishingly, like most children of her age and developmental period, she replies that they are not the same and that there is more juice in Container C because that container is taller than the other and thus the level of the liquid is higher than that of A. This answer is the more surprising because we poured the liquid from B into C right in front of the child with her watching at every moment.
>
> Karen has not acquired the concept of conservation (in this case, the conservation of quantity) because she was unable to tell that the two amounts were the same.
>
> Michael is a 6-year-old first-grade pupil. We ask Michael if the two amounts A and C are the same. At first he says no. If we ask why, he might say something like, "because your Container A is bigger." But if the teacher points out that C is a taller container, Michael might then believe that there is more juice in Container C. And now let us make these results even more confusing. If the teacher asked Michael who would have the most juice if the contents of C were poured back into B (the original container) Michael would probably answer that then the two amounts would be the same.
>
> Michael is simply unclear about where he stands on this matter. He realizes that both the width of one container (A) and the height of the other container (C) must be taken into account, but he is not able to consider both of these aspects at the same time. He knows that if we pour C back into B that both amounts will be equal. We will recall that Karen knew right where she stood on the issue and that subsequent questioning did not change her mind. She "knew" the two amounts were different.
>
> Janet is seven-year old elementary-school child who is taking our orange-juice test. She is convinced that the two amounts are the same.
>
> Teacher: "How do you know that the two are the same?"
>
> Janet: "Well, because they were the same before."
>
> Teacher: "But the new container is higher."
>
> Janet: "Yes, but the old one is wider."
>
> Janet knows that the two are the same because, unlike Michael, she has understood the compensatory relationship between height and width.
>
> Janet has proven that she has acquired the concept of conservation, because she was not fooled when certain properties of the two equal amounts were altered. She remains unshaken in her belief, but, unlike Karen, her belief is accurate.

The performances on the conservation task by Karen, Michael, and Janet reflect a three-step process. First, there is no ability to conserve (as with Karen). Second, there is on-again off-again inconsistency (consider Michael). And third, there is the accurate, unchanging ability to conserve (as demonstrated by Janet).

Developmental Properties

There are, however, types of conservation skills different from the sort seen in this example concerning quantity. Reviews of research in the general area have been conducted by Wohlwill (424), Goldschmid (161), and Flavell (150) with young children concerning their ability to conserve number, substance, weight, length, area, volume, and distance. Definitions of the conserving ability, the age at which they are typically acquired, and additional research findings follow:

- **Number.** The concept of number permits the child to understand that the number of elements in a collection remain unchanged, regardless of how the elements are displaced or spatially rearranged. Conservation of number is typically acquired at 6 to 7 years of age. (250, 252, 425, 116, 117, 406, 407)

- **Substance.** Acquisition of the concept of conservation of substance permits the child to know that the amount of a deformable substance such as dough, soft clay, or liquid remains unchanged regardless of how its shape is altered. Conservation of substance is normally acquired at ages 7 to 8. (255, 143, 360, 361, 362, 363)

- **Weight.** Acquisition of the concept of conservation of weight provides the child with an understanding that the weight of an object remains unchanged regardless of how its shape is altered. This normally occurs at ages 9 to 10. (143, 360, 361, 362, 363)

- **Length.** When a child acquires the concept of conservation of length, he knows that the length of a line or of an object remains unchanged, regardless of where it is positioned or displaced in space. Conservation of length occurs at ages 7 to 8. (16)

- **Area.** In the concept of conservation of area, the child comes to understand that the total amount of surface covered by a set of figures such as small squares remains unchanged independently of whether or not the figures are grouped together or spread out over a surface. This ability is normally acquired at ages 8 to 9. (16)

- **Volume.** In the concept of conservation of volume, the child has acquired an understanding that the volume of an object (in terms of the water it displaces) remains unchanged, regardless of changes in its shape. This ability occurs at or around the beginning of adolescence. (256, 143)

- **Distance.** The acquisition of the concept of the conservation of distance permits the child to know that the distance between objects remains unchanged regardless of objects that may interfere with estimates of that distance. For example, two dolls are placed on a table 50 centimeters from one another. The child is asked whether the dolls are near each other or far apart. A cardboard screen is set between them, and the child is asked if they are still as near or as far (depending on the previous response of the child). At first the young child seems unable to establish a distance relation between the two dolls with the screen interposed. In the next stage of the development of this form of conservation, the child thinks that the distance between the dolls is less with the screen present because the space occupied by the screen is not viewed as part of the total distance. And if a small window is put in the screen, the distance seems less to the child when the window is closed. Conservation of distance is normally acquired at age 7. (334, 359)

Problems Surrounding the Role of General Experience

Piaget (150) firmly believes that the concepts of conservation cannot be taught much earlier than the ages indicated, and the evidence apparently supports this view. He believes, however, that general experience is what leads to the unfolding of the conserving abilities. On the other hand, he also believes that trying to teach a child a specific conserving ability before he is ready to assimilate it and accommodate to it will probably be futile. Kohlberg (239) is in agreement with Piaget on this latter point and cites research which tends to support this view. It is the position of the author that the research appears to be unequivocal. We are reasonably certain that the conservation abilities cannot be taught (or otherwise acquired) to more than an extremely small percentage of children under four and only for certain ones (e.g., number). Where there have been reports of conservation abilities at extremely early ages, the investigators have probably been guilty of not asking the child to explain his conclusion. The child can state that two things are the same but not really understand why, as further questioning would probably reveal. The reader should see Piaget (303) for this criticism as applied to the work of Bruner. There are also problems related to the child's ability to understand such language concepts as more and same (172) and the way questions are phrased in the inquiry of the child (307).

We are not so sure, however, as to the kinds of general experiences a child should have so that he will be able to learn the conserving abilities at the time they are typically acquired. Piaget and others have offered very little in the way of specifying what kinds of environmental experiences are important at the preschool level in terms of their facilitative effect on the subsequent development of the conserving abilities. Piaget provides the theoretical perspective, but not the specifics.

The state of the art does not appear to be adequate to show what specific kinds of experiences the child needs in order to facilitate the development of conserving abilities. The link-up is only theoretical and as such cannot be incorporated into a preschool education program. Its significance lies, however, in warning us not to construct learning tasks for a child which clearly fall outside his capacity to complete. We have seen the importance of success experiences in terms of developing the child's sense of competency. A knowledge of the conserving abilities and when they typically appear to be acquired will prevent the teacher from inadvertently trying to teach a child something that he may not be ready to acquire. This could seriously impair his motivation to learn.

Summary

In the discussion of the perceptual-cognitive processes of the child, we noted the importance of sensory-motor activities and the kinds of concepts and classification skills the child typically acquires during the preschool years. We also noted that conserving abilities appear to fall outside of the abilities of the preschooler. The significance of the research presented in this section was the direction it provided by developing programs which are responsive both to the child's readiness to learn and to the kinds of experiences he needs in order that he may learn the skills which will help him achieve in school. We noted that the skills the preschooler can acquire are similar in kind to the skills measured by tests of intelligence. There appears to be a direct link between the child's sensory-motor activities, formation of concepts, and classification skills, on the one hand, and his performance on the Stanford Binet. This can be seen when one realizes how much of the test measures the same skills and abilities described throughout this section. The Stanford Binet has items involving such skills as stringing beads, drawing forms, manipulating blocks, and classifying and matching items.

The higher level of classification skills which involves a concept of order is also seen in the Stanford Binet in the task which requires the child to remember a series of numbers. Too, a child's spatial concepts are measured by first showing him an object, then hiding it and asking him to find it.

The list of items can go on, but the important point to note is that intelligence, as now measured at this level, rests heavily on the child's ability to manipulate objects and to organize and classify their features on the basis of the concepts and classification skills noted in this section. We have attempted to demonstrate the importance of experience in bringing about the development of the very skills that now characterize children as being intelligent.

The significance of this point lies in the fact that tests of intelligence such as the Binet at this level provide evidence of early school success. In fact, the curriculum of the early grades rests on the assumptions that many of the skills are developed prior to entry into the first year of school. The logic is simple. **If conditions are established which enhance the probability of a child's developing fully the skills sampled by measures of intelligence, the probability that he will succeed in school will be similarly enhanced.**

IV. LANGUAGE DEVELOPMENT IN THE PRESCHOOL CHILD

Introduction

The preschool-aged child is able to acquire the concept that words can represent things and objects. Several conditions that appear to be important before the child can fix labels to objects are

- He must have had past experiences which permit the maximal development of auditory discrimination skills; he must have heard sounds and he must have learned that sounds can be distinguished one from another
- He must also be able to reproduce the sounds he hears
- He must have developed the concepts previously noted as well as the basic classification skills.

In other words, the child must be able to hear and reproduce the sounds of the labels being attached to the features of the objects and things – features which have been learned through sensory-motor experiences and which have resulted in the development of concepts and classification schemes. Once the child has these skills at his disposal he can begin the development of language via labeling.

In addition, the child of three is also at the stage where he begins to form rules regulating his verbal expressions and can benefit from experiences directed toward bringing about the development of correct language structure.

Accordingly, it is the purpose of this section to explore how these two very important aspects of language are acquired and how their acquisition mediates thought itself.

Fundamental to a discussion of language in the preschool age child is a determination of patterns of development characterizing normal children. Language development, however, is not an area which one can discuss in absolute terms. Different cultures have developed such a large variety of language and speech patterns that one is forced to acknowledge the intrinsic fluctuations of language. Language cannot be characterized as a static system; it is in reality, a vital process that is constantly undergoing change. It does fulfill one constant function – communication. Certain stable structures and rules in language regulate its generation in such a way that language can be used to facilitate patterns of communication between two or more people. This, in fact, approximates the definition of language as it will be used in this section:

> *Language is a symbolic system of representation that consists of rules that regulate and generate its use; that has available a system of symbols to convey an individual's representation of reality.*

The first area of investigation is to examine how, under normal conditions, such a symbolic system develops in the very young child and to provide an analysis of how the system mediates and interacts with the development of perceptual-cognitive processes and other forms of abstract thinking of the child. Following the analysis concerning the normal pattern of development of language skill, a delineation will be made of the language differences which characterize children who do not develop comparable systems. We are not speaking here of the handicapped child; we refer, instead, to the child whose physical development is relatively unimpaired but who, for some reason, has failed to develop his language skills to the same degree as the normal child of the same age. It is not enough, however, simply to see where this child differs from the norm. Why he differs is a matter of more concern. Accordingly, the third area of this section will delineate, in some detail, features of the child's environment which may have brought about language-skill deficiencies. By specifying features which are absent in the environment of this child, we are, in effect, underscoring the central role environment plays as well as isolating the conditions which are critical in the normal development of language skills in the very young child.

The relationship between patterns of language deficiency and children's performances on tests of intelligence will be examined. The purpose here will be to call attention to the importance of language as a mediator of intelligence as now measured.

Patterns of Language Acquisition
Characterizing Normal Children

It is important to note here that the child's development in language skills can progress only to the extent that his preverbal abilities – viz., perceptual, conceptual, and classificatory skills – have developed. Thus, language development rests initially upon the amount of preverbal sensory-motor experience a child has had.

First, he must have had enough experience with sound so that he knows that sounds can be distinguished one from another – i.e., he must have reached a certain level of auditory discrimination skills. Second, his vocal-muscular development must have advanced to the point where the child can reproduce the vocal sounds he hears. Finally, he must have developed the concepts of form, color, size, object permanence, etc., as well as classificatory skills. Possessed of these skills, he can then use language as a tool to represent the information about his world with which his sensory-motor, conceptual, and classificatory systems have provided him.

These skills are of great importance in two areas of language development:

- The labeling process, in which the child attaches a verbal label to an object or event

- The syntactical system, in which the child forms generalizing rules that permit the formation of simple sentences.

How do such processes develop in the very young child? The first area to be considered in the analysis of language acquisition is the prelinguistic stage, the period in which the child's utterances have no grammatical or semantical regularity. Following this discussion will be a treatment of the linguistic stage in which the child develops in phonology and grammar, which includes syntax and semantics. A final discussion will concern the interrelationship between the development of thought and language, with a special emphasis given to the concept of verbal mediation as the basis for explaining how this interrelationship becomes established.

The Prelinguistic Stage

The prelinguistic stage usually takes place from 4 to 10 months of age. The sounds a child makes at this point in time are not thought to be learned and do not function as a system regulated by rules for communication; that is, they have no semantical or grammatical regularity according to Carroll*, and Jacobson (209). Here the infant utters both vowels and consonants as in the familiar consonant-vowel-consonant-vowel pattern – e.g., "dada," "mama," (Ervin-Tripp)**. Although these patterns are largely unlearned, there is evidence that suggests that their occurrence may be influenced somewhat by imitation and reinforcement.*

The significance, however, of the prelinguistic period is that it marks the beginning of the process of increasing differentiation among sounds. In other words, the child begins to filter out the sounds that he can make and that have some correspondence to the sounds around him. He picks from what must seem to him an incessant buzz and roar around him those sounds which he can produce. This is indeed a phenomenal step for the infant child, for with this minute beginning of finding a few constants in the chaos of sound surrounding him the child begins the development of his language.

Before this pattern of increasing differentiation of sounds can occur, and the transition made to the communicative stage, certain conditions must be present as follows. The child must be able to produce sounds. His vocal-channel facilities must be developed to articulate properly, and his auditory capabilities must function to perceive differences in sound. (46) Then, he must have the opportunity for an active involvement or interaction with the adults surrounding him (154). A child is able to refine and increase the number of sound units he produces only if he is guided by an adult model representing the standard language of a particular environment. Here it should be stressed that the child does not merely imitate and learn to articulate sounds more accurately; because of the involvement with the model, he also begins to learn that sounds may be symbolic in the sense that they convey a kind of communication to another person. In other words, sound units (phonemes) are now beginning to be combined into units with meaning thus creating a bond between listener and speaker. This obviously entails more than imitation; it involves an active interaction between child and model. The final condition affecting this increasing differentiation of sound and, subsequently, the development of meaning is the establishment of the internalization of the conventional grammatical rules of the language system.* Grammatical rules are required because the variability in articulation is so very great in a given language system. For example, when one hears the sentence "Look at that men," he probably perceives "men" as "man" because grammatically the modifier "that" precedes a singular noun. The young child, however, is not aware of this grammatical rule and will consequently perceive "men" as "men" resulting in confusion when he later produces it himself.

The Linguistic Stage

During the prelinguistic period discussed above, the child is learning primarily the phonetic (sound) aspects of the language. As he develops in his discrimination of sound types through more highly developed vocal and auditory skills, increased interaction with adults, and the beginning of structure in sound he starts to determine the connection between sound and external references (objects, etc.) and he begins to learn the symbolic function of sound – the phonemic aspect of the language. A phoneme is a construction that denotes formal contrasts between words. For example, the phonemes /d/ and /t/ are contrasted in the words "dime" and "time". Phonemes combined may form words in a particular language system so that, when the child contrasts sounds, he comes often to contrast words. Thus, the child's utterances become something more than a random, mechanical reproduction of sound. Once a child realizes the symbolic aspect of sound, he can begin to use it as a more efficient tool in extending his language skills. But he must learn the symbols and their referents just as he must learn the situations in which they are applicable in order to accomplish this objective.

The development of comprehension in the child parallels his development of phoneme discrimination. Evidence appears that shows that the child comprehends symbolic gestures, intonations (i.e., pitch differences), and word and phrase structure at the age of 8 to 12 months.* Unfortunately, comprehension appears to precede the child's own systematic production of the language, so we know little about the degree of comprehension at this stage through the use of present techniques of measurement.** The evidence indicates, however, that the child progresses from an understanding of large units, such as words and phrases, to smaller units, such as similar words distinguished on the basis of minimal phonemic differences (fin and pin, for example).***

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*Reference (145), page 747.

**Reference (322), page 58.

*Reference (322), page 66.

Finally, at the age of one to two, the child begins to make systematic utterances that convey meaning in a regular fashion to those around him. This is the beginning of the linguistic period. It does not proceed in any clearcut developmental stages from this point on. The child's progress is so rapid that it is almost impossible to divide into sequential phases – so overlapping and swift are the various developments that make their appearance at this time.

Hence, rather than attempt to break up the continuity of development into stages, it is more fruitful to analyze the various aspects of development by examining how they approach a mature-language system. We will investigate, therefore, how, from the age of approximately 1 year, the child progresses in phonology and grammar.

Phonology. Phonology, as it will be discussed here, is the study of speech sounds and their changes in a particular system of language. It includes both phonetics and phonemics. As previously stated, phonemic discrimination in the child proceeds in the direction of increasing differentiation. The child seems first to contrast vowel with consonants in his CVCV construction. The exact order of the development of this phonemic discrimination pattern in the young child is not known. However, from the work of Ervin and Miller (59), we can state that there do exist some generalizations in the order of phoneme discrimination that may prove to be universal. For example, the child early learns the differences in sound between vowels and consonants. In addition, early consonant contrasts perceived are those that are articulated in the initial position in the mouth, e.g., /p/, /m/, /f/, rather than those articulated further back in the mouth, e.g., /l/ and /s/. A child is able to discern the difference between those vowels articulated high and low in the mouth, e.g., the "i" in "bit" contrasted to the "a" in "bat", before he can perceive the difference between vowels articulated in front and back positions in the mouth, e.g., the "i" in "bit" contrasted to the "u" in "put". For a more detailed list of such sound discrimination the serious student should refer to Ervin-Tripp.**** This section is not a detailed linguistic discussion; its importance is that the child begins to distinguish between sounds in an orderly fashion, approaching finer and finer discriminations among sounds.

In addition to the order of basic phonemic discrimination, several other characteristics of the child's early phonological system can be stated. Because the phonological system of the child is relatively simple, homonyms such as "pool" of water and "pool", the game, are frequently found in his speech. The child also develops various substitution rules (i.e., rules that children use in replacing an adult utterance with one they are more able to produce) which he uses to apply what he has already developed to newly encountered words. For example, if the child can utter the consonant-vowel-consonant-vowel construction and if he has mastered the phonemes /t/ and /b/, his substitution rule would be likely to replace the adult words "dog" with 'ta ta' and "father" with "ba ba". Systems of substitution give an indication of the child's individual structure for the language and are not simply carbon copies of rules passed on to him by adults. However, there is no universal substitution system for children since the phonological representation itself is a condition affecting the child's sound discrimination and, therefore, varies according to the individual child and the nature of the conditions prevailing.*

In the phonological development of the child, stress (the amount of emphasis a word receives resulting in relative loudness) and intonation (variations in pitch) play a role. It has been shown that the child early develops sensitivity to patterns of stress and intonation in adult speech and consequently adapts them to his own system. (280) Children seem to adapt the stress patterns of adults, and this adaptation may influence phonemic development in that different substitution rules are used for stressed and unstressed syllables. Moreover, children begin early to follow adult intonation patterns as in questions.

It is relevant to emphasize at this point the importance of the development of phonology in the young child. Essentially, if a child does not learn to distinguish between sounds at this level of development, he will have difficulty in distinguishing between words. The child does not have a completed grammatical system until the age of six although he does have a rather highly developed one at age three and a half. As Chomsky (60) has pointed out, English speakers rely to a large degree upon the grammatical order of words to distinguish them, especially when they sound similar. But since the child does not have this strongly developed grammatical system he must rely on sounds to distinguish words to a large extent. If the child does not distinguish between phonemes such as /th/ and /f/, he is in for trouble. He will learn words such as "death" and "deaf" as homonyms and consequently have difficulty in spelling them. If two words sound alike to him but have different meaning, he may experience confusion in understanding the statements of others particularly if he does not have the grammatical system completely under command. Basically, then, the child at the early stages of development must first distinguish between sounds before he can distinguish between meanings.

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*Reference (145), page 747.

**Reference (322), page 59, 60.

***Reference (145), pages 747, 748.

****Reference (322), pages 68, 69.

In summary, this section has discussed how the child's phonology develops: the pattern of increasing differentiation and a few characteristics of his early phonological system. The importance of the development of a sound phonological system is seen to lie in the fact that this system establishes the foundation upon which the child begins to distinguish between words as combinations of sounds formally, and eventually between words as meaningful units.

Grammar. In the above treatment of the phonological development of the child it was seen that, by contrasting sounds, the child comes eventually to the point where he distinguishes words.

But sound is often not enough to distinguish between words as one can observe by trying to understand a regional dialect with which he is not familiar. In the sentence "I will see you tomorrow at the sea", how does one differentiate between "see" and "sea" if not on the basis of sound? The answer is usually obvious to the adult. He replies that through context he knows which meaning to apply to the respective word. More specifically, he probably means that through his experience with language he has drawn up certain rules (perhaps not formalized to him) that state which words go where in a sentence, how they function, and in what various guises they may appear. This is his grammar, which is a set of rules that generates all possible sentences but never any impossible ones. (62) For English, grammar helps to identify classes, to specify relations between words, and to point out contrast in meaning*. Grammar, from this definition is much more than simply knowing rules such as where commas should be placed in a sentence. It involves, in linguistic terms, syntax and semantics. The discussion of the child's development of grammar, then, will be treated as a function of those two areas. Significant research regarding the acquisition of grammar by the young child has been carried out primarily by Brown, Ervin-Tripp, McNeill and Miller. The following discussion will be an attempt to combine the results of the research into one cohesive unit.

In general, all grammars seem to be made up of two classes of words; the content classes, which contain nouns, verbs and adjectives; and the marker classes, containing prepositions, conjunctions, articles and suffixes. In the sentence "We are going to the grocery store and bank," "we", "are go", and "grocery" are content words, whereas "-ing", "to", "the", and "and" are marker words. The content classes carry most of the information and include a great many members in each class. The markers are more differentiated and operate upon the content classes. Prosody – that is, the pitch, accent and voice modulation given to an utterance – also has a significant bearing on grammar. Note the two interpretations of the same sentence when one word is stressed in one sentence and left unstressed in the other: "*That* was really a witty remark" and "That was *really* a *witty* remark". Questions, where pitch rises at the end of the sentence, provide another example of the effect prosody has on the understanding of an utterance. The logical ordering of classes, the functions that markers serve, and the effects of prosody are treated in all grammars. In English, where order seems to be the main support for the grammar and where markers are of lesser importance, syntactical ability seems to appear in children before they are able to distinguish between variations in word formation due to case, number, gender, tense and mood.*

Syntax. It has been stated that syntax is fundamental to grammar, but a discussion of the child's development of syntax requires a more precise definition. Syntax is that part of grammar that deals with the way in which words are put together to form phrases, clauses, and sentences. The development of syntax, then, can be seen as a development of structure and order for words; in English, for example, syntax involves the placement of verbs and nouns, the position of an adjective or clause to modify a specific noun, etc.

The first evidence that the child has acquired some rudimentary form of syntax in his language is the appearance of pivot and open classes in his speech, which has been documented by Ervin and Miller (280), Brown and Fraser (43), and Braine (38). The child's syntactic structure consists of two classes: the pivot or fixed class and the open or free-varying class. The open-class words are many and vary in position around the pivot words. Thus, a typical sentence may take the structural form S[sentence] = (P)[pivot word] + O[open word]. For example, a pivot word for a child in Braine's study was "allgone", around which various open words such as "sock", "boat", and "Daddy" varied, producing "sentences" such as "allgone sock", "boat allgone", etc. It can be seen that the child at this stage, from 2 to 2-1/2 years, has reduced adult speech to words which seem to him to carry the most information (43), in this case the pivot classes, and then used words from open classes to signify variations in meaning. This is clearly an advancement from the holophrastic stage, in which one word may convey a whole complex of ideas and varies randomly with the situation. In general, however, prosody or the situation still define the child's utterances more than order does. Nested constructions, that is, modifiers on various pivot words, e.g., "that rabbit" and "that Jimmy rabbit" are found in the child's speech at this point, indicating that the child is beginning to develop a phrase structure. "Slot" grammars also begin to be present in the child's speech at this time. Here the pivot word is still in a fixed position but more highly developed structures are seen to vary around it. For example, the meaning is the same for the utterances "truck", "there truck", and "there's a truck" and they may appear at the same time, but the position of the pivot word is fixed and there is the presence of a more developed structure in the open-class words**.

With the base structure of this pivot- and open-class grammar, however, the child can advance only so far in his syntactical development. The number of special cases that begin to be demanded of him in order to communicate his needs and desires necessitates a further refinement of his syntax (154). The English language provides the marker classes which aids this refinement to a considerable extent. The child first begins to understand markers if they have a meaningful place in the sentence. Then he varies different forms of markers randomly and finally contrasts forms of markers to contrast meaning*. For example, the sentence "The boy jumped on the box" might be contrasted to "The boy jumped in the box" in order to acquire the two markers "in" and "on". In the end, the child encounters enough experiences with markers that he can begin to generalize rules governing them and apply these rules to unfamiliar forms and contexts. Therefore, some pattern operates in the child's linguistic activity.

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*Reference (322), pages 73, 74.

*Reference (322), page 74.

**Reference (322), page 75.

What the child has accomplished at this point in his acquisition of language is quite significant. He can now apply his new rules to all the previous knowledge of language he initially had and formulate entirely new utterances or elaborate upon old ones. (43) Phrase structure and transformational rules have been found to be absent at the 3-year-old level, but after that age they begin to appear and operate to increase sentence length (275). Transformational rules are those rules which allow one to change a basic sentence such as "The man bought the book" to a passive sentence, "The book was bought by the man", or to a negative sentence, "The man did not buy the book", depending upon the rule used. The child can now see that words have different functions and can categorize them accordingly (e.g., as nouns, pronouns, etc.).

Through maturation and increased experience with words, the child can comprehend more of the detail in adult speech, continue to expand and revise the rules he has devised for the generation of his own language, and ultimately become capable of a wider range of meaning. (43)

In this discussion of the development of syntax, we have seen that the child first develops a base structure of pivot and open classes. He then begins to add markers through random variation, contrast, and, finally, generalizing rules. Those rules facilitate the adoption of other rules of phrase structure and transformation which in turn begin to expand the structure of the child's sentences. A discussion of how a child actually formulates these rules, what motivates him, what forces act upon him and what specific capacities he has will be discussed after the section on semantics.

Semantics. While semantics, the study of the development of word meaning, involves a set of linguistic skills, these skills are unlike those of syntax and phonology in that their development in inextricably bound up with concept formation. Just how semantics is connected to concept formation will be discussed under the section on language and thought.

The treatment of semantics here will be primarily one of word meaning as a denotative rather than connotative function – that is, word meaning will be viewed as having to do with a specific object, one that is visible or tangible rather than word meaning having to do with intangible concepts like time and distance. However, even in its denotative function, word meaning can be seen as having a hierarchial structure in terms of classes and hence, have an abstract nature but not in the same sense as concepts, per se. For example, a dachshund belongs to the category dogs which belongs to the category of animals.

Roger Brown (313), the linguist, takes the position that meaning for the child is first acquired by the naming practices of the surrounding adults. Adults usually apply the name most commonly used and the one that signals its utilization in a particular context most accurately. Brown continues by stating that with the child, a vocabulary may be built sometimes from abstract to concrete, sometimes from concrete to abstract, but always in the direction of increasing differentiation. That is, the child may first learn the word "beagle" and then "dog", or he may learn first the word "car" and then "Ford", depending on which words are used most frequently by the adults the child interacts with and on the purpose with which the word is used. But no matter which word is learned first, the child's vocabulary grows by making finer and finer discriminations between words. Let us examine how this process takes place.

The child first gives a label to an object. As Vygotsky (406) theorized – and Bruner (46) concurs – the label first appears to the child as a sum of the characteristics of the object he is observing. According to John and Goldstein (105), he matches the word to the requirements of an object as he visually perceives it. In addition, the child first perceives the contrast between words as contrasts in sound not meaning. The child is still most able to find contrast on a direct sensory basis, and will not readily do so when he lacks sensory stimuli.

How a child originally perceives an object depends on all the circumstances involved with an object: the gestures, inflections, the people attending it and the quality of the child's sensory modalities. The first words a child utters seem to have a global characteristic. That is, whatever is salient in the objects to which a child gives a label, defines what that label means to the child. For the young child, a single word generally has references to many objects or to many features of a simple object. Hence, the word "button" can apply to a button, a round object, an object with holes, an object attached to a garment or all of these. These global meanings attached to single words are characterized by the following:

- Instability, a tendency to change with the situation
- Concreteness, for nouns, their reference to objects with sizes and contours; and for verbs, their reference to human and animal movements.*

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*Reference (332), page 76.

*Reference (332), pages 62, 63.

Thus, the child's first words are tied in with his basic perceptual processes at this stage of development.

At this point the amount of experience a child has with a word begins to broaden. He hears the word used in association with a variety of other words and events often lacking association with a visible referent. The importance, then, of visual perception begins to recede, and the variety of verbal contexts in which a child hears a word predominates in the development of the child's ability to discriminate between words.* With an increase of experience in the growing child comes an increase in the number of items the child comes to know.** By now the holophrastic system has outlived its utility, for the child's memory span and/or cognitive processes at this stage has not developed enough to cope with the massive amount of words and experiences he has to handle. (154)

Fortuitously for the child at this time, he is acquiring the basic syntax, S = (P) + O discussed earlier, such that he can begin to order his words into classes and then store them. Nouns, verbs, and interjections seem to be the most typical classes of words found in the child's vocabulary.* The child is using his basic syntactic structure to categorize his words at this point. Words are becoming more specific and relational rather than remaining as another physical attribute of an object as in the early stages of semantic development.*** Fundamentally what the child has done is to symbolically encode, through the use of words, a set of experiences into a structural system, his syntax, governed by rules which he can use to extract those experiences for use outside of the time and situation in which he first encountered them. Additionally, with the aid of his syntax he can vary sentence order and produce an original utterance while conveying a meaning consistent with the initial experience.

Now the child is at the period of his syntactical development that he begins to acquire markers. Part of the force behind his acquisition of these markers is the continuing need to free his memory from the burden of too many interpretations for one sentence (154). With an ever-increasing amount of experience, the child feels the pressure to economize and at the same time approach a higher degree of differentiation and expression in the use of his words. This he can do, according to McNeil, by compiling an internalized dictionary with the aid given by his developing syntactic rules. The fact that the child's vocabulary greatly increases at the end of his third year gives evidence that he forms such a dictionary (see Table 1).**** Finally, with the acquisition of a full set of markers the child has progressed from the holophrastic sentence, to a base-structure sentence, to differentiated sentences with markers and phrase structures. Instead of defining words in a global fashion, he is able to use a large variety of words in a variety of situations.

TABLE 1. VOCABULARY GROWTH(390)

Years-Months		Number of Words	Gain
	8	0	1
	10	1	1
1	0	3	2
1	3	19	16
1	6	22	3
1	9	118	96
2	0	272	154
2	6	446	174
3(a)	0	896	450
3(a)	6	1222	326
4	0	1540	318
4	6	1870	330
5	0	2072	202
5	6	2289	219
6	0	2562	273

(a) In Thompson adapted from Smith, M. E., "An Investigation of the Development of the Sentence and the Extent of Vocabulary in Young Children", Univ. Iowa, Child Welfare, 3 (5) (1926).

Note: This table is valuable only as a tentative guide to evaluate the growth of individual children and to show developmental trends.

It has been shown that an increase in vocabulary depends on two other developments in the child: his perceptual abilities and the syntactical structure he is developing for his language. The child's linguistic growth, apart from vocabulary, depends on the variety of objects he encounters, the number of verbal contexts in which he hears the word, and the ways the word is used, in other words, the number of experiences the child has with a word. It has been shown that by age three the child's vocabulary begins to expand rapidly and that by age six he has, on the average, a vocabulary of around 2562 words. (390)

Language and Sensory-Motor Experience

While growth in language skills is important in and of itself, it cannot be divorced from the child's preverbal growth in perceptual-cognitive processes. Indeed, early sensory-motor experience is necessary for the development of language skills.

As previously noted, the child must have developed his auditory skills so that he can distinguish between sounds and eventually between words. He can develop this auditory skill only if he is exposed to a rich variety of sounds and sound types. This is not to say that the child must be bombarded with sound. On the contrary, an environment which provides only noise has been found to lead to inattention in the child, a tuning out of sound rather than a selection of different sounds. (91) Especially for language development, sounds should be experienced in a situation which fosters attention and excludes irrelevant or interfering noise. In such a situation, auditory experience will enable the child to detect variations in sound to an increasingly finer degree. Once able to do this, the child can isolate vocally produced sounds and begin to produce them himself.

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*Reference (322), page 61.

**Reference (322), pages 62, 63.

***Reference (322), pages 63, 64.

****Reference (390), pages 367, 368.

At this point the child's level of maturation is important, for it is only when the child has mastered control of his vocalic muscular structure that he can reproduce the vocal sounds he hears.

It has been pointed out that, once the child can discriminate between sounds and produce them himself, he advances to labeling objects, and with a supply of words, can eventually begin to order these words with the basic sentence structure S = (P) + O. Once again, preverbal sensory-motor experience is vital to the growth of labeling and syntactic skills. The only way a child learns about the external world is through his senses of sight, touch, taste, smell, and hearing. These sensory modalities define an object for the child by isolating significant features of the object – how it looks, smells, tastes, and feels. An object is further defined by the kind of motor activity the child undertakes with it. In addition, along with sensory-motor experience comes the formation of crucial preverbal concepts which include object permanence, space, form, color, size, seriation and numeration. With the acquisition of these concepts, the child can further define the objects he encounters. Thus, when he is supplied with a label for an object, that label becomes a symbol for all the features his sensory modalities have given him. Research has shown that as sensory-motor experience increases so does the child's ease of learning labels and understanding them. Katz (223) found that labels are more easily learned if given with the referent object and in a variety of situations. Jensen* found that ease of learning labels is facilitated if the child can play with or touch the object being labeled. Finally, Luria (257) states that, if a label is applied and the referent object is perceived at the same time, the essential features of the object are isolated, and that these conditions facilitate understanding.

In addition to concept formation the child also develops classificatory skills at the preverbal level. In order to classify, the child must have highly refined perceptual processes and the concepts necessary for classification. It has been found that preschool children can learn to group and match objects on the basis of color, form, and function. These children can also learn that objects have features in common. With such a skill the child can begin to organize the world around him, and when he acquires labels he can, in turn, apply a label to the group he has formed.

Even in the acquisition of syntax, the child's growth depends upon his earlier sensory-motor experience. Quite obviously, it would be impossible to construct a sentence without a supply of words. Therefore, all of the conditions necessary for label learning hold also for syntax learning. Moreover, the importance of fine auditory discrimination is again underlined. Having moved beyond mere initial phoneme discrimination, the child has to distinguish between words and various word forms as they appear surrounded by other words in sentences as produced by adults. It is necessary for him to contrast various words in order to contrast the functions they serve in sentences, a skill which depends basically on how the child perceives sounds. In addition, using the classificatory skills he has developed, the child can group words according to the function they serve in a sentence. This grouping produces the general classes of pivot and open words discussed earlier which make up a child's basic syntactical structure and which are his first generalizing rules governing the sentences he utters. Thus, we see that the most basic skills involved in language learning are dependent for their development on the sensory-motor experiences and the subsequent formation of concepts and classificatory skills the child acquires.

In the light of this information, it is possible to delineate several considerations to be made in encouraging language development in the child. First, the child's sensory-motor capabilities must be estimated to determine how far he can advance in language with the level of skills he has acquired. For example, a child with low auditory skills can be expected to have difficulty in distinguishing between phonemes and in forming logical sentences. Second, the level of concept formation a child has attained should be determined. Without concepts of form, color, size, etc., the child can be expected to be retarded in classificatory behavior, and this circumstance would impede his syntactical development. Moreover, his labeling behavior is likely to be affected since essential features of objects will not be isolated on the basis of these concepts.

Developmental Dynamics

It is appropriate to begin this section with a quotation from Jerome Bruner's *Studies in Cognitive Growth* (46, p. 44). He states that language itself is not imposed upon experience, but rather "It is by the interaction of language and the barely symbolically organized experience of the child of two or three that language gradually finds its way into the realm of experience". The important word here is "interaction", for it is essentially through the process of interacting with his environment, through sound, form and touch, that a child begins to form an idea of reality and, eventually, a system of dealing with that reality through language.

The child begins to use verbal signals to fulfill his needs and desires and to avoid the things he does not want. He learns to detect the signals of people around him that facilitate the fulfillment of his goals.* In the words of Fowler (126), the infant "having repeatedly encountered certain patterns of stimulus changes, tries actively to retain or regain them." Gradually the child becomes bored with the familiar patterns and seeks new ones. As Piaget (150) puts it, "The more a child has seen and heard, the more he wants to see and hear." This is the basis for what Fowler terms "growth motivation". Ervin-Tripp* upholds this statement by suggesting that the more diverse a context in which a contrast between forms of words is heard the easier it is for the child to acquire these contrasts.

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*Reference (371), page 128.

*Reference (145), pages 747, 748.

In this manner, then, through variety of context, in sound, sight, and touch, the child comes to differentiate between aspects of his environment. In the case of language, where meanings were initially global and the use of the holophrase predominated, the child now sees variety in meaning. In syntax, he progresses from the basic structure S = (P) + O to phrase structure and the use of transformation rules in order to convey the variety of understanding he is becoming capable of through his differentiating process.

At first the child begins to discriminate between items on the basis of random contrast**. He learns through a trial-and-error method, as Carroll terms it. But with the aid of early concepts and classificatory skills, he can begin to develop a syntactical system with generalizing rules that cover a wider range of experience with words. He begins to generalize and formulate his words into classes that have a definite structure. McNeil (154) postulates that the motive behind the child's development of generalizing rules to regulate structure in his speech is the need to economize and to state precisely what he means. With the increasing amount of differentiation between words and the expanding range of experience that the child encounters, he must evolve a more suitable system to accommodate all this, in order to decrease the pressure it puts upon his memory skill at this stage of development.

To a certain extent researchers have explained the child's acquisition of these processes through the technique of imitation; that is, the child hears sounds around him and imitates them, gradually becoming more and more skillful. But imitation can be of aid to a child only to a certain extent. Imitation is commonly observed in the early stages but is no more grammatically difficult than what the child spontaneously produces, hence, it introduces no new forms and cannot advance the child's grammar. The child may imitate what he neither understands nor uses, and he would be likely even to imitate errors. Hence, it can be seen that imitation itself is influenced by the child's memory span, his comprehension of grammar, the generative programming rules and limits of complexity the child has attained. Imitation is truly valuable in aiding the growth of the child's grammar only when the child can reconstruct a long sentence by first recoding it correctly and recognizing and remembering errors as well.***

Since imitation appears not to be a satisfactory system of introducing new forms into the child's understanding and production of grammar, an alternative should be sought. McNeil proposes that adult expansions of the child's utterances are the primary route along which new forms enter the child's understanding. The adultpresents a correct model of language by operating upon a sample offered by the child himself. From an example given by Slobin in McNeil (154), the child makes the statement "Papa name Papa", and the adult takes the same utterance and completes it by saying "Papa's name is Papa, uh-hum." As can be seen, the parent takes what the child says and expands it to include structures that the child has not mastered. In this manner, new structures are directly introduced into the child's speech with a corrective model available for reference. Combining the adult expansion with the element of frequency could very possibly lead to continued differentiation on the part of the child and ultimately to growth in language skills.

In summary, the first language expression the child uses is the holophrase. Then, with the aid of his base-structure syntax, he begins to be more specific in his utterances. With the acquisition of markers, he can structure his utterances to give finer and finer discrimination between words. To this tool is added increased vocabulary and experience. The child appears to be motivated to constantly seek out the new in familiar contexts and to be able to represent concisely what he experiences through language. In the early stages of development of speech, the child may simply imitate the sounds heard around him. But in order to comprehend what others are communicating and to reproduce an utterance independent of surrounding adults, the child needs to develop and internalize a set of generalized language rules to govern his speech.

Using a statement of Braine as reported in Ervin-Tripp*, "The learning of higher-order structures is a kind of perceptual learning, involving gradual differentiation." But whatever the basis, which is still to be unequivocally established, we do know that children "make inductive generalizations which go beyond what they hear, accounting for their persistent idiosyncratic grammatical patterns."*

Language and Thought

Vygotsky (406) states "Absolute correctness is achieved only beyond natural language, in mathematics." Anyone who has ever tried to express a thought is poignantly aware of the difficulties encountered in trying to convey his thought to someone else with any degree of correctness. The tool he must use is most often language, and the utility of this tool depends on three factors: the structural system of the language that is available to the person, the set of connotations of meaning which the person has acquired for his words, and the manner in which he is able to use words to

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*Reference (322), page 61.
**Reference (322), page 76.
***Reference (322), pages 80, 81.

*Reference (322), page 81.

mediate his thought processes. In turn, a person's ability to acquire labels or words and a sound syntactical system depends upon his early sensory-motor experience. Hence, even at the earliest stages in a child's development the level of thinking he will attain in the future is being determined by the amount and quality of his sensory-motor experiences.

It should be clarified here that, while a person must make use covertly of the above described language skills in thinking, this is not to say that language fosters thought and that a highly articulate person is extremely intelligent or vice versa. Ervin-Tripp* points out, to the contrary, that concepts and general thought processes take place in the young child before he has a language system to express them. Nevertheless, the acquisition of language does help the mind to scale to higher levels of abstraction. (239)

In order to see how language aids in transforming thought, this section will consider how this process occurs in the very young child. With this examination, perhaps, it may be possible to determine how thought and language interact with one another, what factors contribute to their interaction, and to what degree these factors depend upon one another. In this manner, it is hoped that it will be possible to formulate part of the criteria needed for judging the normal growth of intellectual processes in the young child.

Verbal Mediation. In the discussion to follow, various paradigms will be used as examples to describe how the child learns to mediate his thoughts with verbal cues. These paradigms are used only in an explanatory sense and are not meant to describe actual neurological events.

Development. The learning of language is like the learning of any behavior. Characteristic of language learning, however, is that it gradually becomes regulatory behavior; once learned, language becomes a tool to govern other forms of behavior. (24)

In the beginning of learned behavior the child is stimulated externally, which evokes some kind of response. The child at the preverbal level is most stimulated by objectives and events which appeal to his senses of sight, touch, smell, taste, and hearing.** The objects he encounters are most often represented to him by the actions he undertakes with them – seeing and handling them. (46) Bruner calls this the enactive system of representation.

Following the enactive stage, the child learns to represent the world to himself through images. He can begin to abstract an object through an image of it away from the direct environmental stimuli. (46) According to Bruner (46), the image becomes relatively free of action around the end of the child's first year.

At about 1 year of age the child pays more attention to other forms of auditory sounds. This stage is commonly called the labeling period, in which the adult gives common names to objects in the environment. The child begins to respond to these verbal stimuli more than to other sound stimuli.

From the time he is two until he is three, the child begins to make his own verbal response to stimuli. However, this early verbal behavior is little different from other kinds of motor response since he uses the verbal response to communicate but not to regulate his own behavior.

Next, at the age of 3 to 4 years the child uses words voluntarily to control his own behavior. He utilizes the set of verbal instructions learned when adults used them to regulate the child's behavior. (257) The child of age three to three and a half can begin his behavior by verbal control but cannot stop it. (257) This is the point at which the child responds to the words as a "signal of a signal". He is no longer responding directly to the stimuli immediately produced by the environment but rather to the whole class of nonverbal stimuli evoked by the word. (24) The environmental stimuli produce a verbal response in the child which may be either overt or covert and which then governs his motor response. This verbal response is what is meant by verbal mediation. While it is originally overt in character, it becomes gradually internalized – that is, it is no longer spoken aloud. (406) The motor response governed by the verbal response may then be followed by another verbal response, the verbal confirmatory response, which acts as feedback to positively or negatively reinforce the motor response. It may take the form of such words as "good", "that was nice", or "bad".

As the child develops, there is an increase in the number of events that will stimulate verbally mediated behavior. That the use of verbal mediation is a developmental process is evidenced by the mediation deficiency found in young children when compared to older children. According to Reese (317), this lack of use of verbal mediation may reflect limited development at an early stage, in either concept formation or maturation. As noted before, a child's verbal abilities depend upon his maturational level and preverbal level of concept formation.

At about age 4-1/2 to 6 years, the child's internal speech becomes more spontaneously produced, whereas previously it often had to be prompted by adults. In a true sense, then, he begins to regulate his behavior by speech, and this self-directed speech becomes gradually internalized (i.e., thinking) as the child develops. According to Piaget, as cited in Whiteman and Deutsch (108), the sensory-motor schemata derived from physical interaction with the environment in the early years becomes internalized through verbal interaction and the development of language skills so that the mental structure can cope with the different kinds of stimulation and problems it encounters.

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*Reference (322), pages 84, 85.

**Reference (211), page 124.

Finally, after a child has acquired some experience with words, he develops a verbal response to the verbal stimulus. He learns that one word – e.g., apple – is closely related to another word, possibly fruit. The child is beginning to develop an interconnecting, hierarchical network of words. He learns how words relate to one another and, hence, how they can be used together in sentences. Through this process the child, in Bruner's (46) words, "learns the constraints on the words' conceptual rather than perceptual range".

Factors Influencing Development. In Hunt's (370) opinion, the child is motivated to retain the patterns of stimulus and response he has encountered in his environment. This interest is most aroused by the discovery of something new in a familiar situation. This motivation, then, would be easily aroused by verbal stimuli which follow regular patterns but provide variety through the use of different words. This may be a reason for the saliency of verbal stimuli above other sounds for the child. It, most significantly, points out the necessity of verbal variety for the child's growth in a desire to learn.

When the child has advanced to the labeling stage, he must have acquired certain abilities in order to learn the labels properly. The child must be able to focus his attention selectively. He must be able to select the element common to all instances of a label to aid in the formation of categories. (105) According to Bruner (46), during the first 2 years of a child's life, his perception is focused only on the surface features of an object, not on the deeper structure that may be based on features common to a variety of objects. Only when the child is able to perceive that deeper structure is he able to label objects correctly, to show how objects are different or the same, and how they form categories.

Research has shown that verbal labels are more easily learned if the labels are given with the referent object and in a variety of verbal contexts. (223) This seems to verify Luria's (257) contention that a label directly connected with perception of an object isolates the essential features. It has also been shown that the label is more quickly learned if the child himself acts with the object being labeled by playing with or touching it* and if perhaps at later stages, he verbalizes the label himself (413).

When the child reaches the stage where he should make a verbal response, he must have developed his vocal and auditory skills so that he can make sounds, and he must have developed an adequate phonological system to represent these sounds as words.

When the child advances to the stage where he can regulate his behavior by his own verbal responses, he must be equipped with the inclination to label objects and events, and he must have developed to the point where he can, through speech, control his overt responses. According to Hunt, in Whiteman and Deutsch (108), the mental structure is able to solve a problem only when there exists a match between the internal schemata and the external problem. Hence, the importance of a well-differentiated structure for verbal mediation to be used in problem solving is evident even at this early stage of development.

The child's ability to mediate will rest ultimately upon how well he can relate spontaneously word to action. (231) A child's ability to spontaneously use verbal mediation increases with his chronological age and measured intelligence. He must, first of all, have acquired correct verbal mediators – that is, a set of words applicable to a variety of situations. Next, he must be able to produce spontaneously these mediators when confronted with a problem.

Lastly, a child's ability to verbally mediate depends upon how well he can relate words themselves to one another. The strength of connections between words will depend upon the degree of differentiation he mastered when learning labels and, ultimately, upon the set of circumstances accompanying the words when the child first hears them – i.e., his total experience with the words. The strength and number of connections between words are determining factors on how well concepts are formed and utilized by the child, as will be shown in our subsequent treatment of the associative network.

Moreover, there is an extremely close connection between the ability to form categories and to attach meaning to labels and the development of a personal-value system. This connection is not shown in child-development studies, but rather is made very apparent by the careful delineation of the structure of value systems and the role of language in developing the capacity to make judgments concerning whether a thing is good or fair or bad, according to Hartman. (181)

Advantages of Verbal Mediation. Verbally mediated behavior has several advantages over the simple stimuli-response behavior. First, if the child can respond with different labels for different objects, it will be easier for him to discriminate between them. At the kindergarten level, Kendler, Kendler, and Carrick (232) report that, in a test of inference ability, children were better able to respond correctly if required to give labels to common critical elements of two segments.

Second, when faced with a new task, the child does not have to learn a completely new behavior if he has developed a sufficient set of labels and can control the required motor response. He is more able to generalize his response in different situations. Even in nonverbal tasks the child is able to identify critical invariant features through verbally mediating his response. (105)

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*Reference (211), page 128.

It has been shown that a verbal label is easier to remember than the visual image of an object* perhaps because it may be accompanied by reinforcement (24).

Also, the child learns to furnish his own verbal reinforcement, allowing for efficiency in learning. (24) For example, in building a house with blocks, a child does not have to build the complete house to see whether it will stand. During stages of its structure he can judge the position of blocks, saying internally "yes" or "no" and proceed along the correct path. Here, verbal mediation helps the mind orient itself when presented with a task; it does more than just accompany action (406). In young children (and lower animals) this process is limited but it develops with age in the child. It is necessary that the child acquire this form of verbally mediated behavior for reinforcement since higher forms of learning depend on reinforcement that is not directly connected to the physical environment.

In general, verbal mediation allows the child to act more vigorously and rapidly and increases his ability to receive information from the environment by recoding and storing this information. (24)

It has been shown how verbally mediated behavior develops in the child: the child first responds to the tactile and kinesthetic aspects of his environment, and then he responds to verbal stimuli. He learns to produce a verbal response, uses this response to regulate his own behavior, and eventually provides verbal stimuli within himself to regulate behavior. These internal verbal stimuli are to a large degree governed by the network of association that the mediating words comprise. In addition to pointing out some factors influencing the development of verbal mediation, this section has stressed the importance of verbal mediation for learning. At this point, the interrelationships between the development of the associative network and the syntactical structure of the language system and the development of verbal mediation must be more closely examined.

The Associative Network. The associative network a person forms is the network that connects words that may not be directly related but which are more categorically related. For example, an oak tree and a rose do not directly correspond to one another, but they find a common category – plants. As can be seen, a more elaborate associative network can relate words to a very fine degree, connecting them by what are commonly referred to as connotations. A rose may be associated with a young girl in that both share the connotation of being young and blooming. Luria (256) sees a word as a unit that passes on the experience of generations as that experience is expressed in a language system. With the acquisition of a word, the child also acquires a set of connectives useful as a tool for "introducing forms of analysis and synthesis into the child's perception".

Importance in Problem-Solving and Concept Formation. Jensen* states that the formation of an associative network is important in all areas of problem solving and conceptual thinking.

In problem solving, a person is better equipped to verbally mediate if he has a strong associative network. Stimulus words are reorganized according to the verbal associations they arouse in a person. If labels are related in a subordinate fashion, as in the associative network, research has shown that recall is facilitated. Previous verbal stimuli, if incorporated into the network, can affect the direction that subsequent stimuli will travel when they are introduced. Fowler states: "All ensuing concepts formed serve as cumulative constraints determining which higher order paths to abstraction and which set of representations of reality we come to comprehend." It is clear that with such chains of mediators more than one verbal association can be made with a stimulus word.**

As it was defined, the associative network connects words in a hierarchical fashion. Hence, the topmost level of the chain of words would embody the property or set of properties common to all the words below it. This corresponds to the definition of a concept – an idea that is generalized from specific instances. Thus, a person who has developed a strong associative network of words, that is, one that has a large number of connections and one that has connections that are closely related can be seen to have developed a strong set of concepts.

Development. Research using the word-association test has shown that a person's associative network is a function of age since, with age, the structural aspects of grammar develop and help to form the associative network and a person thereby has an increasing amount of experience with words which tend to enrich his network.*** As Jensen*** states it, "Since the associative network is built up only through verbal stimulation, its richness, complexity, strength of connectives, and hierarchical elaboration – and consequently the effectiveness of its mediating and facilitative functions – will be determined in large part by the quality of the person's verbal environment." Ervin-Tripp**** states that from 3 to 4 years of age reactions are generalized between words and referents but with little discrimination. Maltz (262) adds that consistency in the meaning of concepts is not reached until about the fourth-grade level, so that word meaning does seem to be a function of amount of experience. The linguist Roger Brown (42) states that meaning for a word is the sum of all the general dispositions a person has for a word and that these dispositions are a function of the experiences the person has had with the word in association with the referent.

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*Reference (211), page 135.

*Reference (211), page 149.
**Reference (211), page 152.
***Reference (211), page 153.
****Reference (322), page 84.

When a child is able to relate objects on a nonsensory basis, abstracted from direct perceptual experience with an object, he is then able to match more closely the meaning applied to an object or event as it is given by the adult, and not merely match the objective reference of an object. (46, 406) Once able to do this, through increased experience with words, the child is able to use his developing associative network in problem-solving and concept formation.

Syntactical Mediation. According to the hypothesis of Werner and Kaplan in Bruner (46), "language provides a kind of inclination to form concepts of objects and events that have a structure comparable to those contained in words, form classes, and sentences". If this is so, then our concepts should follow a hierarchical pattern similar to that used in language. The Soviet researcher Luria feels that once a child has acquired a language he can, with his new tool, restructure what he experiences according to the structure of the language. His experience can now be systematized, categorized, and stored. Let us examine, then, how the structural system of a language, its syntax, helps mediate thought processes and reorder experience.

Jensen* holds that the syntax of a language becomes an underlying process that helps govern a person's verbal behavior. Syntactic level does have an effect on learning, but research has not as yet uncovered the means by which this is accomplished.* However, it is known that a well-developed syntactical structure increases the speed of paired-associate learning. It has also been shown that, if words are given a syntactical rather than random or nonsyntactical organization, paired-associate learning will again improve. (85) Words not in syntactical order seem to have no effect on paired-associate learning. (329) The type of syntactical connective and degree of difficulty was also seen to facilitate learning.*

The effect of syntax on learning seems to be slight at the kindergarten level but increases with age up to the sixth grade. Thus, it is vital that the child continue to master his syntactical structure to increase his learning ability. It has also been shown that children structure their mediators according to syntax although that syntax may be, as yet, less varied and complex than that of older children.

In the section on grammar, the development of syntax in the child was traced. We saw, there, its importance in relation to speech, and now we see its importance in relation to thought processes. Hence, factors influencing the growth of syntax – experience with words, and adult expansions of utterances in the young – will eventually influence the ease and skill with which the child uses language to think. In addition, the child will be able to do syntactical mediation only to the extent that he has formulated a set of verbal mediators; the more mediators he possesses, the more skillfully he may use syntax in organizing thought and the more correct his language will be in expressing thought.

Language Deficiency

In the previous section the development of language skills in the normal preschool age child was outlined and it was seen how these skills facilitate intellectual processes in the child. This section will be concerned with delineating areas of weakness in the development of language skills.

Research conducted on the level of language skills has consistently found that lower class children are deficient in the development of language skills when compared with middle-class children. The results of research also indicate a consistent pattern in type of deficiency. In addition to differences in phonological development and specific errors in conventional usage and grammar, investigators agree that generally the lower class child and particularly the lower class black child have not developed the level of syntactical skill and the level of abstract and categorical use of words that the middle-class child, black or white, has developed (John in Bloom-72; Deutsch in Weaver and Weaver-410; Deutsch-91; Ausubel-133).

Phonology

Even at the stage of phonological development, differences appear between lower class and middle-class children. Trevin in Bloom (72) found that young children from lower class homes produced fewer sound types than children from higher socioeconomic status homes. He also found that with children from 1-1/2 to 2-1/2 years of age there was a difference in phoneme frequency when groups differing in occupation of the breadwinner were compared. In a study by Trevin, reported in Cazden (125), it was found that, when lower status children were compared with higher status children in phonology, the difference in development first appeared at 18 months of age. In general, Weaver in Bloom (72) reports that a study of lower class black children shows that they are weak in auditory-vocal channels and strong in visual-motor channels.

Conventional Usage and Grammar

Specifically, several elements in the usage and grammar of the lower class and the black child can be stated. According to a study by Bailey (13) the lower class black child has difficulty with verbs. Tense is only optionally expressed, and when it is indicated, it is done by the context rather than inflection of the verb. In addition, this black child rarely uses the verb "to be", and when he does, here again, either it is not inflected or only one inflection is used to indicate all tenses. Loban (249), from a longitudinal study on children from kindergarten through sixth grade, found results similar to Bailey's. He found lack of agreement between subject and predicate in the speech of lower class black children, indicating noninflection of the verb. The verb "to be" appeared to be 12 times more difficult for black

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*Reference (211), page 155.
**Reference (211), page 157.

Southerners to use than for white Northerners. In addition, Loban found that lower class children commonly make less use of the linking verb. Bailey also found a deficiency in the use of markers. Lower class black children did not use possessive markers if sentence order indicated possession and they did not use plural markers such as "s" if a cardinal marker such as "three" or "eight" was expressed in the noun phrase. Once again lack of agreement between subject and predicate can be seen as the result of nonuse of inflections and markers. Indeed, Henry (193) points out that "standard English" and "ghetto English" differ in forms of predication.

In relation to vocabulary, John and Goldstein (105) found that lower class children had the most difficulty with action words such as gerunds, words related to rural living, and, in general, words whose referents were perhaps rare in the low-income home.

These deficiencies in usage and grammar seem to indicate that the lower class child and particularly the lower class black child will be quite limited in giving correct expression to his words.

Syntax

Deutsch (91) has stated that the level of syntactic organization is the primary area of difference between the language skills of middle class as compared to lower class children. Loban (249) found that there was little difference between groups as far as structural patterns were concerned. However, within structural patterns – i.e., in the flexibility and frequency of use of noun and modifying clauses, infinitives, and verbals – differences between high- and low-status groups were significant, with the lower status group performing consistently below the high status group. In addition, the lower group was found to use fewer subordinating clauses and connectives than the higher groups.

Bernstein (25), the English sociologist, has emphasized the inflexibility of lower class speech by pointing out the rigid syntax characteristic of lower class speech and the limited number of possible variations which this speech has. As McCandless in Bloom (72) has found, the lower class child becomes more and more concrete and inflexible in the use of language as he grows older. Cazden (125) adds that the child from a group characterized by a nonstandard dialect (e.g., the Negro) does not use the full range of words and structures available, even in his own dialect. With only a limited number of patterns and variations available, it seems clear that the lower class child will develop only a rigid, strictly defined syntax that will subsequently limit the variety he is able to give to his expression and the flexibility with which he will be able to use his language to verbally mediate.

Labeling and Categorizing

In the previous discussion on language and thought, the importance of the labeling period in providing the child with verbal mediators was pointed out. The dependence of labeling skill upon the ability to discriminate between objects on the basis of features common to the objects was also emphasized. Research has indicated that the lower class child and particularly the lower class black child does not develop labeling skills to the same degree as his middle-class counterpart.

John and Goldstein (105) found that lower class black children paid close attention to the unessential features of objects and had not learned how to locate the important, common features of objects with the same name. According to a study by Spain, as reported in Cazden (125), the black child tends to give a concrete and idiosyncratic reaction and lower class children at all age levels most often give functional definitions. In a study of first- and fifth-grade black children, John (215) found that, indeed, the lower class children classified objects according to the function they served and were only indirectly able to state an underlying concept, whereas middle-class children were able to group objects on the basis of categories that had class names. Ausubel (133) states that the child from the low-income groups tends to be more responsive to the "concrete, tangible, immediate, and particularized properties of objects and situations".

It appears that this child is still responding to stimuli on the basis of perceptual rather than verbal saliency. The child who has not learned to label objects on the basis of essential, invariant features – i.e., the child who has not learned to recognize the deeper structure of objects, as this lower class child appears not to have done – will be less skillful in classifying objects. Unable to categorize objects and events on the basis of deep rather than surface structure, the lower class child will be limited in the development of the associative network, and consequently his ability in problem-solving and concept formation will be affected.

This section has delineated a certain population of children, the lower class and especially lower class black children, who are consistently deficient in the development of language. It was seen that these children are deficient in auditory-vocal skills, conventional usage and grammar, syntax, labeling, and categorizing. The importance of the development of these skills in order to provide tools for expressing variety in speech and flexibility in verbal mediation was also stressed.

Factors in the Environment of the Lower Class Child Which Influence the Development of Language

It is clear that the lower class child has not acquired a set of language skills that will provide him with the same opportunity to achieve that is afforded the middle-class child, who represents the norm (and presumably the majority) and for whose developmental levels the typical school curriculum is ordinarily devised. This paper contends that the reason for this inequality in opportunity is the inequality in environment experienced by these children. This section will focus on specific characteristics of the lower class environment that tend to influence the development of language in the very young child.

Bloom (32) has suggested several variables in the environment that may have an effect in intellectual growth as a whole. These are:

- The stimulation an environment provides for verbal development
- The degree to which affection and reward motivate verbal-reasoning achievements
- The amount of encouragement given to a child to get him to interact with a problem, explore the environment, and learn new skills
- Adult attitudes relative to school achievement: the significance education holds as a means of personal advancement and achieving a better role in society.

The most consistent findings that present research has to offer in relation to the above variables deals with the amount and type of verbal interaction between child and adult. Deutsch (98) states that the lower class environment does not provide the child with "adequate and continuous, sustained, connected and relevant verbal communication". John and Goldstein (105) find that, when learning labels, the child does not have the chance to take part in active dialogue with adults. John and Goldstein emphasize that it is perhaps the use of language rather than its quality which differs most between high- and low-economic-status groups. They postulate that action words are difficult for lower class children to learn not because they have not experienced the action but because language has not been used to represent the action symbolically. Furthermore, Ausubel (133) points out that the lower income class child is not provided with corrective feedback by the adult when he learns rules of enunciation, pronunciation, and grammar.

The attitudes of the surrounding adults themselves seem to be determining factors in how the child behaves verbally. Shipman and Hess (349) found, in a study of black mothers and their 7-year-old children, that the maternal attitudes of limited options and limited individual power were passed on to the children. They found that the behavior in low-income groups is mediated by authority rather than by verbal cues. Consequently, the child behaves on the basis of immediate reward or punishment. Strodbeck (139) finds that the prevailing atmosphere in the low-income home is a sense of threat. Too often the father of the family is not present or, if present, his authority is undermined by his lack of ability to provide substantially for his family. As a result he finds he must exert his authority through physical discipline with his family. As a result, the child learns that proper behavior means keeping out of the way of adults by being physically and verbally inactive. (139) Indeed, a study done by Terrill, Durkin, and Weisley (388) found that lower class children were most motivated to learn by immediate, material reward (e.g., candy or toys) whereas middle-class children learned more quickly when supplied with a nonmaterial symbolic incentive (e.g., grades or verbal praise). This may be due to two factors in the environment of the lower class child: the lack of development in verbal skills and the resultant failure to find significance in symbolic motivation; and the failure of low-income adults to provide encouragement for "learning for learning's sake" beyond any immediate, tangible goals. This has obvious effects on the child's later achievement in school, which operates primarily on the basis of symbolic motivation.

Ausubel (133) points out that a variety of objects and events in the environment stimulates the persons in that environment more than a monotonous environment will stimulate them. Here, too, the environment of low-income groups fails. It does not furnish the child with a large variety of objects to use as referents in label learning. (133) There is also little excursion outside of the environment, and thus circumstance limits the number of new experiences the child may encounter. (98) Jerome Bruner (110) states:

> In general, an impoverished environment, one with diminished heterogeneity and a reduced set of opportunities for manipulation and discrimination, produces an adult organism with reduced abilities to discriminate, with stunted strategies for coping with roundabout solutions, with less taste for exploratory behavior, and with a notably reduced tendency to draw inferences that serve to cement the disparate events of its environment. . . .

Deutsch (98) states that the detrimental effects of these environmental factors have the most damaging results through their cumulative interaction. Deutsch along with his associates at the Institute for Developmental Studies in New York City found a significant correlation between verbal skills and a set of environmental variables which compose their Deprivation Index. (108) The Index lists six variables on each of which a child is rated 1 or 2 – 6 being the lowest possible total score and 12 being the highest. Low scores on the Deprivation Index were accompanied by low scores on tests of verbal ability. A child with a Deprivation Index of 6 would be rated to have the following factors in his environment:

(1) Less than sound condition of housing on the block where the child lives, with complete plumbing but in poor condition

(2) A parent that aspires to a college or less educational achievement level for the child

(3) Three or more children under the age of 18 in the child's family

(4) Nonparticipation in dinner conversation by the child

(5) No anticipations of cultural experiences by the child, e.g., visiting relatives, family, museums, library, zoo, outside New York City, school or his work, for the coming weekend

(6) Nonattendance of the child at kindergarten.

These factors combined as they were on the Deprivation Index, had a significant correlation with low performance by children on tests of verbal ability.

Considering the environment of the low-income-class child, one will not find it difficult to see why the child has not developed a broad vocabulary, correct usage of grammar, a flexible syntax, or a system of abstract categories for his words and concepts, at least to the same degree as that of the middle-class child of the same age. His environment provides little stimulation in the way of a variety of objects and events; thus, deprivation results in a low level of discrimination between objects, and little incentive to seek out the new in a familiar context. Of the lower class child, Piaget might have said: the less variety a child sees and hears the less he wants to see and hear. In such an environment, as there is little verbal interaction between the adult and the child, the latter is not exposed to a wide range of words. There is little correction of the child's speech to alleviate his difficulty in formulating rules of syntax and in discriminating between objects on the basis of significant invariant features. Finally, the child is given little motivation to learn or to find the significance in nonmaterial symbolic incentives. Such factors seem to have little to do with the day-to-day problem of surviving.

Recommendations for Education

It is evident by now that the lower income class child does not develop in the area of language to his full capacity, primarily because of factors in his environment. Many educators and researchers feel that it is imperative to reach this child at the preschool-age level to ameliorate his difficulties, especially in the area of language acquisition, since language is a cumulative skill, its quality dependent upon the quality of previously acquired abilities. (108, 112, 133, 410, 55)

These researchers not only advocate preschool education for lower class children, but also stress that the program must be highly structured and aimed at developing specific skills in the child before he is confronted with the formal school situation.

First, compensatory education in language must identify for the individual child the level of competency he has reached and proceed from there. (133) Since language acquisition is itself a developmental process, a program for teaching language must be graded according to difficulty of skill to be taught. (370, 98). Furthermore, the most beneficial results of preschool compensatory education are derived from providing education in interrelated areas not just one. (108) Judging from the previous discussion of language acquisition, one can see that a single-focus program is almost ludicrous since language is highly related to development in the areas of perceptual and cognitive skills and motivation for learning.

The need for an education in interrelated areas is emphasized by the programs outlined by researchers for the preschool level. First, the child should be presented with the opportunity to develop perceptual skills in order to be able to discriminate between objects and events. (133) The child should be provided with, and encouraged to use and play with, a variety of objects to enjoy the experiences that are perhaps ordinarily not found in his home environment, in order to facilitate growth in discrimination and gradual adjustment to the school situation. (112, 134) It is hoped that through increased active participation with objects the child can begin to relate and abstract ideas. (133)

Second, correct verbal communication must be encouraged. There is an obvious need for increased interaction between the adult and the lower class child, and this interaction must include corrective feedback from the adult to the child. (108) This is absolutely imperative since it is only the adult who can provide the child with the generalization and discrimination required for the acquisition of language. (105) Since in a preschool program, the teacher is the adult with whom the child must interact, it is necessary to insure that teachers are properly and thoroughly trained in what to expect of the lower class child and in how to handle the problems these children encounter in language learning. (193, 112) The teacher should understand the differences between standard and nonstandard English and give value to both. (129) Lloyd (131) advocates that the teacher use normal speech patterns and familiar materials at the beginning and use words in context rather than in isolation. In addition to having constant and connected verbal interaction with an adult, the child needs to have his syntactical system corrected and refined. (133)

Finally, a preschool program should not overlook the problem of teaching the lower income class child to want to learn. According to Ausubel (133) these children need teachers that are personally involved and enthused about their work and able to communicate this excitement to the child. They need teachers that can respond to each child as an individual in order to foster the growth of a strong self-concept in each youngster. (112) The child must also learn that he can explore his environment and expect reward rather than punishment for this exploration. (112) It is hoped that through increased development and use of language the child will be more able to see the significance of symbolic motivation in relation to himself. By providing reinforcement for verbal tasks performed correctly, the teacher can advance the child's appreciation of symbolic motivation to a large degree.

Later Effects of Early Language Deficiency

As the child progresses through school, he is faced with increasingly difficult tasks that require refinement of previously acquired skills. If the child has not acquired the skills requisite for a task or has acquired them but not to a degree that he can be said to have mastered them, he will not be able to handle the tasks he encounters regardless of the environment in which he finds himself. Learning is cumulative in development. Especially in language, as has been shown, learning depends on the gradual acquisition of skills over a period of years. Hence, a child who is deficient in language skills at the preschool level can be predicted to be deficient in these and related skills as he advances through school. More than this, the increasing difficulty and interrelatedness of tasks predicts that this child's language deficiency will become more and more pronounced – that is, a cumulative deficit will result.

Indeed, Deutsch and his associates (107, 90) found a significant verbal deficit, as shown through tests of verbal ability at the first-grade level, that correlates with the Deprivation Index, socioeconomic status, and race. At the fifth-grade level this verbal deficit was seen to have increased. In addition, on test of verbal ability (WISC Vocabulary Test) the deficit correlated not only with the Deprivation Index, but also with socioeconomic status, and race; whereas, the nonverbal test (Lorge-Thorndike I.Q.) showed no significant correlation between socioeconomic status and cumulative deficit. However, once the factors that are given in the Deprivation Index are controlled, the cumulative deficit associated with race tends to be ameliorated. The older child with a low score in the Deprivation Index shows more verbal deficiency than the younger child with a low score on the Deprivation Index. In another study, Deutsch (91) found that, while at the first-grade level only three scores on tests correlated with low socioeconomic status and race, by the fifth grade twelve tests used correlated with low socioeconomic status and race. Deutsch summarizes that what results from an impoverished environment, plus minority-group status and 4 years of school experience, are children who have less ability to handle the intellectual and linguistic tasks in school than less disadvantaged children of the same age. On the whole, Ausubel (133) finds that the consequence of early language deficiency is a retarded and less complete change from concrete to abstract thinking.

John and Goldstein (105) report that an early deficiency in verbal skills produces a later deficiency in covert verbal skills (i.e., verbal mediation). In addition, Reese (317) found that if a child does not learn correct labels at an early age, subsequent concept formation will also be inadequate. A poorly established concept will result in reduced verbal mediational ability. Deutsch (98) adds that, as the level of difficulty of tasks increases, the requirements for accurate labeling and categorizing skills also increases. Hence, the child will encounter difficulty in matching new experiences and tasks to the inadequate abilities he has.

Deutsch (112) has found that early failure in school results in lowered self-concept for the child. Once a child becomes aware of his deficiency, he is less apt to respond to a challenge he does not think himself capable of fulfilling. He withdraws from active verbal participation, and the value of language as a tool for problem-solving recedes, with the result that the child fails to see the value of school – a system which operates on the basis of symbolic motivation.

Summary

This section attempted to describe how language is acquired and its relationship to thought. Also included was a discussion of how the development of language is tied up with the sensory-motor activities, concept formation and classificating behavior of the growing child. The important point is that language plays an increasing role in the child's success in school because it is at age six that the child begins to break away from a reliance on an intuitive concrete form of relating to his environment to a more symbolic, abstract one.

Important as these considerations of the first two sections are, however, in terms of the child's success in school, two other areas hold similar importance and they are the child's motivation for learning and the condition of his health.

Accordingly, these two topics will be considered in some detail in the succeeding section.

V. THE SOCIALIZATION SKILLS OF YOUNG CHILDREN

Introduction

Socialization can be defined as "The process by which an individual learns the alternative modes of behavior available in various social settings and the consequences of adopting each mode."* When the child is very young he can do little for himself and is dependent upon adults for the satisfaction of his needs. Realization that his parents are necessary and fear of losing their love motivate the child to conform to their demands. Parents often make use of a child's dependency to channel his behaviors into socially acceptable forms and to teach him necessary social skills. (271)

Between the ages of about 2 to 3-1/2 years children begin to pass into a stage in which they resist adults, assert themselves, and become more independent. (271, 288, 320) The overt dependency behavior decreases in frequency as the child matures for a number of reasons:

- From past experience, the child becomes less afraid that his parents will cease to love him
- His parents begin to reward independent rather than dependent behavior, while continuing to satisfy the child's dependency needs
- The development and acquisitions of sensory-motor, cognitive, and language skills help him to cope with the environment and his successes strongly reinforce independent behavior
- With increasing opportunity for contact with other children, peers become more important, and they, too, encourage the development of independence. (271)

With increasing age (and experience) children, also, begin to behave in accordance with sex-appropriate roles. (288, 391) Children learn sex roles partly through observation of, and identification with, the same-sexed parent, and partly through subtle reinforcement and pressure, which comes from peers as well as adults. (288, 310, 323, 391) By the age of two to four, girls show more interest in people than do boys (288), and learning of sex roles continues at least through the ninth year (391).

Socialization With Other Children

Cooperative Play

At approximately the age of 3-1/2 to 5 years the child becomes more cooperative and friendly (271, 288, 391), and, due to his increasing opportunity for group participation, he becomes more interested in his peers (319). Children, 2 and 3 years old, can maintain active contact with only one person at a time, but in later preschool years children usually play in groups of two to five. (288, 320) With increasing age children progress from idleness, solitary play and onlooking behavior to parallel play*, associative group play, and cooperative activity for mutual benefit. (288, 391) Cooperative play is organized for some goal and makes use of division of labor, differentiation of roles by group members, and an organization of activity such that children's efforts supplement one another, but there is little true leadership. (288) With increasing age, interest in formal groups increases. (391) Older preschoolers show a greater desire to win the approval of others and avoid their disapproval. (288) Their social sensitivity and responsiveness increases; they express more consideration, kindness, and sympathy and do so on more appropriate occasions. (288, 391)

Aggressive Behavior

With increasing age, social interaction of all types – both cooperation and aggression – increases, but cooperation becomes more predominant proportionately. (320) Young children learn to control the aggressive impulses in the course of socialization (323), but their low frustration level and immediate need for gratification often handicap them. There is more quarreling over play materials and less quarreling during dramatic play in which social roles are well defined. Older children are less frustrated and engage in conflicts less frequently (288, 391), but the conflicts last longer. The older children do less crying and screaming, however, and more use of language is made in controlling the aggressive acts of others. (288, 320)

Children become more competitive as they mature. Two-year-olds, indifferent to the social situation of competition, are predominantly interested in the play materials. Three- to 4-year-olds exhibit some rivalry, but it distracts them and diminishes their work output, and their main concern is still with the materials and cooperative activities. Competition becomes pronounced, however, in children 4 years old and above, at which age it increases their work output. (391, 288)

Socialization Skills of Poverty-Depressed Children

Parents from poverty depressed cultures usually are more authoritarian and restrictive in the rearing of their children. They explain rules less, and make use of fewer symbolic rewards and more use of physical punishment. Children from such homes tend to show slightly poorer personal and social adjustment. (323, 324) Explaining rules could offset these effects, but, in the lower socioeconomic class and in large families, parents do not usually do so. Punitiveness, also, increases children's hostility and aggressiveness. (323) Use of physical control as opposed to punishment by withdrawal of love motivates the child to try to escape punishment instead of developing inner controls, which are more effective in regulating behavior. (271) Children from more lenient, democratic homes probably have a relative social advantage here because such rearing, though it encourages aggressiveness and persistence, tends also to promote friendliness, active social participation, and constructiveness (323) which are, however, positively correlated with popularity. (319, 320) Thus, the social acceptance of the lower class children coming from large families may be hindered by underdeveloped interpersonal skills, too much hostility or aggression, underachievement, and poor verbal skills (perhaps due to less opportunity for interaction with parent in large families) (323), all of which are negatively correlated with popularity. (391, 320, 324)

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*Reference (324), page 222.

*Playing along side another child but not with him.

Social-class membership itself may be a handicap. There is a strong tendency for children to choose friends of their own socioeconomic status partly because of proximity of homes and possession of similar values. (319) When children seek friends outside their own class they usually choose those of higher status, whereas young children ranking quite low may be rejected. (324) Lower class children may also feel less secure because their fathers possess less social power (271), and the resultant anxiety, too is negatively correlated with popularity (324).

Summary

The preschoolers who are most successful in relating to other children are those who have already mastered the basic interpersonal skills. (320) Unfortunately, those who are most in need of social experience start at a disadvantage and are likely to meet rejection. Since they have few social skills they generally react with aggression or withdrawal, either of which increases their alienation from their peers and further limits their opportunities to learn the socially appropriate behaviors. (324)

Implications for Teaching

As noted earlier, the teacher usually reacts negatively to children with low social status, further lowering the child's self-image. (319) He tends to criticize the boys, increasing their hostility. (324) However, if he becomes aware of this situation he can help to reverse it by changing his actions toward the child. This would encourage the group to follow his example. (320) Disciplining a child for negative behavior toward the low-status child might also influence the other children to treat the latter more kindly. (324) If he directs his class democratically, there will probably be less scape goating. (319) The teacher's praise increases the social acceptance and perceived competency of the child whom he praises. (319, 324) His attitude also helps to determine children's response toward persons of other races in mixed groups. (314) The low-status child may actually change his behavior to meet others' new expectations. (319) However, if a child's social position is changed solely as a result of the teacher's manipulation, it may revert when his influence ceases. (324)

The teacher can assist the child by helping him to develop skills that increase his confidence and raise his ascendancy. (320) He can also arrange situations that will provide him opportunities to increase his social awareness. (320) Placing children from poverty-depressed areas into the same group will give them more opportunity to practice leadership than they would have had in groups with more dominant children. (320) He can strengthen children's participation in the group by having members share materials, giving them a concrete task (320), and rewarding and punishing them as a group (319). A group member's response to the group will be more positive if he is rewarded. (319) When conflicts develop the teacher can help the children learn how to deal with them by interpreting each other's position to one another, explaining rights, and suggesting possible solutions.

VI. THE SELF-CONCEPT BEHAVIOR OF YOUNG CHILDREN

Introduction

A significant development in the young child is the awareness of himself as an object among other objects in space. (276) It is at this point in time that the child begins to form hypotheses about his identity and attempts to test them against reality. He develops knowledge of himself in much the same way that he conceptualizes the world about him. Horrocks (201) summarizes this process as follows:

> From birth the human organism has the long developmental task of building an identity with which it can interpret and cope not only with its social and physical environment, but also with itself as a functioning physical organism. This is a gradual process occurring over a long period of time, never really ending during the life of the individual, although in its formative stages the first two decades of life are the most crucial and action-fraught. During these years an identity is not only hypothesized, it is related to the surrounding world of persons and things. The hypothesized identity has to be tested against reality and must be modified and changed as reality proves it to be inappropriate or ill-conceived.

This is a very important development step for the young child and the extent and efficiency by which he is able to differentiate himself from other objects in his world is clearly dependent upon whether or not he has had the opportunities to develop the perceptual-cognitive and some aspects of the language processes which would permit him to distinguish the features of objects and then to compare and contrast those features against his own.

Thus the beginning development of the child's identity is clearly a cognitive matter. Once the child reaches a clearly defined identity of himself as a physical entity, he begins to form ideas about what it is he is able to do (i.e., the functional relationship as himself as an object). This expression of identity is soon characterized in terms of an ability to achieve or to do something successfully and the child soon characterizes this property as having a "belongingness" to him as a physical entity. There appear to be two sources which contribute greatly to this sense of achievement identity in the young child, namely, parental interaction and a kind of discovery learning on the part of the child. As noted earlier, the child has a curiosity behavior and through trial and error he soon learns that he is able to do certain things and as a result develops first a propensity to learn and then a sense of awareness that he can and does learn. In addition, the nature of parental interaction soon begins to play a significant role as they involve themselves in the child's world of exploration and learning. They encourage him to learn, they help him to label objects, examine features, relate ideas, elaborate on his sentences; this generally results in establishing a set of skills which in turn permits him to benefit more directly from his encounters in the environment.

More importantly, however, is the impact this dual influence has on the child's identity concerning his "ability" to achieve or do something successfully. White (289) characterizes this notion of feeling capable in terms of a developing sense of competency. He states

> Sense of competence can be seen as a cumulative product of one's history of efficacies and inefficacies. It comes to operate in new behavior as a kind of set; we judge whether or not we can jump over a brook or carry out a proposed task. It also comes to be much cherished, so that we feel truly elated at new proofs of our ability and deeply humiliated when we cannot do something we supposed was within our power. The sense of competence thus has motivational backing, doubtless from a variety of sources.

As Lazarus (244) points out, the ability to accommodate and assimilate in response to demands can be thought of as White's competence, and the feeling of satisfaction-dissatisfaction in terms of a perception of what one is able to do is clearly tied up with this notion of a sense of competence. Success experiences, therefore, for the young child are critical to this aspect of his identity development and are, according to Hunt (138), a function of a match between current levels of abilities and the situational challenges the young child faces. Accordingly a mismatch might become so overwhelming as to have the result of depressing the notion of an ability to achieve or a sense of competency.

In summary, therefore, the child's development of identity of "who I am" is characterized by a developing sense of "what can I do and how well am I at doing it". Thus, we have the beginnings of what appears to be a pattern of achievement motivation (i.e., a drive to succeed) which clearly influences the course of learning and is, itself, the result of successful past experiences in dealing with or adapting to specific encounters with the environment.

The Development of Achievement Behavior

As McCandless* notes, an individual has as part of his identity, data on behaviors with which he is successful; he seeks situations wherein success is probable and he tends to avoid those wherein success is not probable: "success" is idiosyncratically defined, and ideas concerning "probability" of one's success are largely determined by an individual's general conception of himself in terms of key patterns of what he can do. As Strom (115) notes, individuals do not choose to compete when they do not see possibilities for success. It can be seen, then, that achievement behavior and identity development of a sense of competency are in constant interaction; Crandall's report of closer relationships between expectancy of success and actual intellectual success than between I.Q. and actual intellectual success bears testimony to this fact. (111) If, therefore, the child has been rewarded and encouraged for his achievement behaviors and has therefore continued in his performance, and as the child simultaneously becomes more aware of himself and his capabilities, he – through practice – becomes more adept at these behaviors and, concomitantly, is given favorable feedback; the net result is that the child begins to see himself as competent (which is, in and of itself, rewarding) and thereby acquires a certain store of internal achievement motivation – his achieving becomes somewhat self-sustained.

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*Reference (269), pages 353 to 392.

An area of increasing research interest concerning conditions which affect the achieving behavior of children are the parental reactions, attitudes, and values associated with high-achieving children. Davis and Havighurst (88) noted that middle-class parents place a very strong emphasis on assuming responsibility for oneself and making individual achievements. In accord with the middle-class value on children's achievements, the middle class is less permissive with its children than is the lower class, becoming involved in and concerned with the children's achievements and making early demands on the child for better achieving behaviors. (88, 331, 332) In the typical American middle-class home, the future is seen as a bright time, delayed rewards are valued as worth the time and effort (339) and individual achievements are respected (88).

Parental training practices are generally consistent with these values in the middle-class home; mothers of high-achieving children are actively involved with setting high goals for the child and are willing and helpful in the realization of the goals. When these goals are achieved, approval is given; when not achieved, the mother tends to be rejectant. Fathers of these same children are approving of successes, but generally yield greater independence of goal setting to the child. (332)

Rosen and D'Andrade (332) report that parental confidence in their children is associated with the achievement of the children. This is clearly in line with the study of Rosenthal-Jacobson (373) suggesting the importance of teacher expectations as they relate to achievement.

In addition to learning to achieve through rewards, punishments and parental values and success experiences some achievement behavior is thought also to be imitative. Research at the Fels Institute shows parents' attitudes towards their own achievement behaviors to be related to their children's achievements. (138) Rosen and D'Andrade (332) note that high-achieving sons' mothers are themselves competitive and striving. Furthermore, Crandall (138) observes that socioeconomic status is determined in part by the achievement behavior of the family' breadwinner; it is, therefore, possible that the lower achievement of the child is partially resultant of imitative behavior of adult figures who are not achievement oriented. Ausubel and Ausubel (134) note the significance of imitative behaviors of young children to the adult, particularly in the more matriarchial family structure of blacks. A very real identification problem exists for the young male child because of the absence of an adult male figure, successful or not.

In a summary of the research and literature in the area of achievement motivation, Crandall (111) reports that that which appears to create high achievement motivation in the child is a high level of cross-sex, parent-child interaction laced with some degree of pushing behavior from the parent, especially the mother. Additionally, Crandall, et al. (76), state that general maternal reactions are not necessarily predictive of child achievement (e.g., affection); whereas direct rewards of specific achievement behaviors is predictive. That such patterns develop early in life are shown in longitudinal studies reviewed by Crandall (58); although children's achievement behaviors until age three were not necessarily related to later behaviors, by the early elementary school, the achievement behavior of children was quite stable.

A comparison can now be made between the American middle-class child and the lower class child on the basis of some of the conditions mentioned. First, as has been noted, the two cultures' value systems differ. In the lower class, the future is not seen as being optimistic in terms of success experiences and immediate rewards are sought (113, 339); Riessman (74) reports a high value of the extrinsic rewards of education, but not of educational activities in and of themselves; the lower class child's acceptance at home is not conditional on his school success (340); the material or concrete is more valued than the abstract (135); influences by the peer group are more precocious in the lower class (134); children are reinforced by physically aggressive behaviors (57); and parents more often attribute failure to external factors (340, 115); and Deutsch (340) notes that an attribute of low-class values is a freedom from self-blame: misfortunes are attributed to external factors. The lower class child may, therefore, be less anxious over failure than his more advantaged counterpart, primarily, because his acceptance at home is not dependent upon success. Deutsch continues, however, by observing that this child's failure will also be more final. The fact that he is not responsible for his failures must also mean that he is not responsible for his successes. Thus, the development of "what I can do and how well can I do it" is not internalized as a part of this child's identity.

An important similarity between the classes exists, however; both lower and middle class place a high value on educational success as a means to social mobility. (109, 131, 340, 341, 74) In the lower class home, however, there exists a lack of understanding of how to help the child to be successful (340) and a more serious lack of time and enthusiasm to give the child what he appears to need most; approval, encouragement, and rewards.

Concurrent with the apparent lack of success with lower class parents to train the child to be more achievement prone and to develop a sense of competence through a good match of success experiences are the amazingly high aspirations which the parents hold for their children. (228, 74) Studies reviewed by Bloom, et al. (74), show black aspirations to be even higher than white lower class goals. Stendler (74) reports that parental expectations of their children decrease in accordance with their socioeconomic status but not enough to be realistic. Boyd also found that black elementary-school children have higher aspirations for future success than Caucasian children of identical age and socioeconomic status. For example, Keller (228) found (in a group of families one-sixth of which had no employed breadwinner) that a majority indicated that they hoped their sons would be professionals (e.g., doctors, lawyers, engineers). Eighty percent wanted their children to acquire college degrees. Reasons for such unreality probably lie in a defensive reaction such as that studied by Rubins, reported in Horrocks (201): it was shown that failure to develop a positive identity resulted in any number of possible reactions, these ranging from severe emotional conflicts of withdrawal, aggression and denial to exaggerated self-idealization. This latter, a sort of delusional system, is probably explanatory of lower class aspiration levels in general. Denial mechanisms also emerge as a result of not being exposed to conditions which facilitate achievement behaviors. The black child, for example, was found to be sensitive to the fact that there are differences between him and white children and he attempts to deny such differences by rejecting his race. Stevenson (433) reports not only a less realistic self-awareness of race in black children, but also a higher tendency to reject one's race. Most black children color drawings of themselves more lightly than is realistic and have to some degree a preference for white playmates over children of their own race.

The lower class child, however, does not experience directly these expectations via parental interaction in the form of encouragement from home to achieve. For example, in a study of lower class children from New York City, Keller (228) found that less than 50 percent of the children ate at least one meal each day with at least one adult. In addition, the opportunities for the development of the skills which would permit the child to achieve are similarly not available. Moreover, the lower class parent does not give rewards, maternal or otherwise; reward seems to be defined in these homes as "absence of punishment". (134)

Ausubel and Ausubel (134) describe lower class parents as more "casual, inconsistent and authoritarian" resorting more often to "harsh" corporal forms of punishment. As the parents are not always present, the child is likely to be differentially disciplined for identical behaviors at different times. Additionally, the fact that poverty and lack of time for the child does not allow for rewarding the child's positive behaviors means that the lower class child is rarely treated as successful.

Parents of the lower class home show some dissatisfaction with their child's school performance (228), but they do not know how to help him (340). The overlap here is comparable to that mentioned in the section on intelligence. This does not detract from the premise that certain environmental conditions in the home do affect the course of development of a child's sense of competency in a rather dramatic way.

VII. NUTRITION AND LEARNING

The experience of learning, no matter how well planned the program, presupposes the existence of a normal, healthy young child. Although this report has emphasized to a rather large degree the potent impact of environmental variables on the young child's psychological development, it has not focused attention on the biological needs of the young child. Today, however, there is widespread agreement that adequate satisfaction of nutritional needs and of the need for sleep or rest heightens the probability for learning. Although many of the investigations concerned with nutrition and growth are usually conducted by comparative psychologists, a few studies have been concerned with malnutrition and the effects on learning with young children.

For example, investigators who studied protein and calorie malnutrition in children found a heightened increase in apathy when compared to normal children of similar ages and socioeconomic background. The behavior of the children was characterized by depression in both curiosity and general activity. In addition, their responsiveness to all environmental stimulation was sluggish and passive. (78) On the other hand, when children who suffered this type of nutritional difficulty were treated with a more adequate diet, the early sign of recovery was reflected by the child becoming more actively involved with his environment.

More importantly, however, are the follow-up studies which have reported that the children never do fully recover and thus their intellectual and academic deficiencies are depressed. (52, 292) This phenomenon has been studied more closely by Gravioto and Rubles (79) using the Gesell tests of growth and development. They were particularly interested in the effects of malnutrition on the following dimensions of adaptive behavior: perception of interrelationships and the separating of the whole into its component parts and resynthesis. Their findings on the Gesell developmental quotient for a group of chronically undernourished children indicated that these children persisted in low performance scores in tests of adaptive behavior during rehabilitation.

There are other factors at work here since the children are often born to parents who have restricted educational backgrounds, and whose environmental surroundings are less than optimal in terms of sound perceptual-cognitive development. In terms of an interactional point of view, however, it is significant to note that a listless, passive child would stand to benefit little from environments regardless of their soundness in an educational sense. This fact is illustrated in studies by Cravioto, et al. (78), which demonstrated that in addition to the passivity factor, measurements of visual, haptic*, and kinesthetic** integration are also depressed by chronic but moderate degrees of malnutrition. The implications here for the child's sensory-motor and subsequent perceptual-cognitive development discussed in an earlier section should not need further elaboration.

There is another important condition that directly affects the basic condition of malnutrition and its impact on the child's active involvement with his environment. That condition is the frequency and chronicity of infection, which also characterizes population groups in whom malnutrition is indigenous. Repeated infection begins a circulatory effect which increases metabolic demands but at the same time inhibits the absorption of nutrients, resulting in a further deterioration of the nutritional state of the young child. (167) Thus infection and malnutrition have an interaction effect on the child's ability to react to the sensory stimuli from what probably is already an inadequate social environment.

As noted earlier, the methodological problems do not permit the separation of the effects of malnutrition from infection and from environmental factors. Nonetheless it suggests the need for an understanding that the development of educational programs of direct benefit to children must rest on factors in addition to intellectually stimulating environments.

More curious, however, is a study reported by Breckenridge and Vincent (3), of children who had an opportunity for the adequate early development of perceptual-cognitive processes but were later placed on a diet inadequate in quantity and quality because of wartime conditions. The result was characterized as having an effect on the child's ability to achieve, mainly upon his vitality, energy, and working capacity. The observations were concerned with young German children during the First World War. Teachers of these children were interviewed and the results revealed that the children who had been on rigid and inadequate diets for at least 3 years developed the following patterns: inability to concentrate, slowness in comprehension, poorer memory capabilities, inattentiveness, and restlessness. As a result of those changes in behavior, it was necessary to lower the standards of school work. Even then, a significant increase in the number of children failing occurred, with a corresponding decrease in the number of those children who had been doing superior work. More significantly, however, was the finding that obtained scores on tests of intelligence were little affected. In terms of school achievement, however, there was a real discrepancy between their predicted behavior as measured by tests of intelligence, and what they were actually accomplishing in school. According to the author of the study the reason underlying this finding was the inability of the children to concentrate and resist fatigue. Other investigators* also noted similar problems of behavior among malnourished children. On the other hand, changes in the quality and quantity of diets appear to improve performance. In another study reported by Breckenridge and Vincent, changes made in both the quality and quantity of breakfast diets of poor school children resulted, after 10 days, in significant increases in school performances.

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*Relates to the sense of touch.

**Relates to an awareness of muscular and body movements.

*Reference (3), page 136.

Studies such as these hold significant implications for the education of young children. If the child is unable to become actively involved in the educational process because of apathy, sluggishness, and a general state of listlessness little learning will occur. On the other hand, even if he has the requisite abilities to successfully achieve in school, the quality and quantity of his diet may be so poor as to bring about lowered achievement in school.

VIII. LEARNING DISABILITIES: THE EFFECTS OF ENVIRONMENTAL DEPRIVATION

The Empirical Dimension

The preceding sections attempted to logically relate the importance of sensory-motor, perceptual-cognitive, and language development to school success because the skills defining these areas (i.e., visual and auditory discrimination, concepts, classification, labeling and sentence structure) were the skills measured by tests of intelligence like the Stanford Binet and the Merrill Palmer Scale. It was also noted that these kinds of skills can be acquired by the preschooler. Because tests of intelligence are related to school achievement, it was logically inferred that if preschool programs were to provide for the development of the skills measured by the tests, the likelihood of success in school would be similarly enhanced. Sections VII, VIII, and IX support the logic of this premise by noting what happens to the school achievement of the children who are denied the experiences for the development of these types of skills.

The purpose of this section is to examine in some detail how the absence of certain features of an environment bring about a depression of the skills needed for school success.

Perceptual Processes

Impact of Environment

Research shows differences in perceptual skills among various groupings of individuals. The two which have received the most attention are auditory and visual skills. The vast majority of researchers related perceptual disabilities to lack of sufficient prior stimulation. (22, 110, 212, 385, 7, 98, 109) It is observed that the child with poor perceptual skills has often had no experience with pencils, crayons, or paper before school (258), comes from a poorly lighted home (311), and may even be lacking sufficient physical energy because of nutritional deprivation (22). Jensen (212) reports experiments in which rats experienced physical changes in brain chemistry following early differences in environmental stimulation. According to Piaget, transactions with the environment yield learning (344); and Jensen (210) reports perceptual abilities as "acquired very early in life through looking at, listening to, and handling a great variety of things".

Jensen (212) notes that differing sensory input can be expected to lead to differing levels of perceptual ability, a point which is well illustrated by the congenitally blind individual who has undergone surgery for removal of cataracts: "to distinguish a triangle from a square, even the most intelligent patients had to painstakingly count the corners". It is, then, apparent that various perceptual skills are learned, and that learning appears to be at least partially dependent on experience with relevant stimuli.

Auditory Discrimination

Lower class children have been shown to have poorer auditory discrimination than that of middle-class children. (98, 104, 64, 111, 410, 183, 210) Deutsch (97, 98) notes that, although data do not exist to prove the statement, investigations have advanced the hypothesis that a generally noisy home leads to not only poor auditory discrimination, but also general inattention: MacKintosh notes that these children have not learned to listen (258), i.e., to attend selectively to relevant parts of the background sounds. One would expect more noise in an overcrowded home, and overcrowding has been found to be a common characteristic of the lower class home (101), as is the continuous din of the television (311, 228). A further factor which may be affecting auditory discrimination is the failure of adults to correct the child's enunciation and pronounciation. (98) It appears, then, that in addition to observations by Deutsch (98) and Jensen (212), a lack of variety of auditory stimuli may also lead to poor discrimination and too many signals at once may similarly lead to inattention, subsequently yielding poor discrimination abilities (64).

Visual Discrimination

Although the literature notes that the environment of the lower class child affects his visual discrimination (210, 183, 111), this sensory modality does not appear to be as significantly affected as audition; Bereiter (19), for example, observes that blind children generally have average I.Q. scores, whereas the deaf are usually approximately 10 I.Q. points below average.

Detection of errors in a pictorial-completion test has been used as a measure of spatial visualization and a larger number of errors have been found among lower class children when compared to middle-class children (7). The question arises, however, as to whether this indicates a lack of visual skills stemming, e.g., from little variety of shapes and textures in the home (98), or whether it is really a measure of low perseverance and inattention (101).

A study of both visual and auditory skills found that a higher reaction time is needed for interspersing visual and auditory stimuli. The authors state that "having to attend to auditory and visual stimuli at the same time may require different skills than attending to either modality in isolation". (106)

Effects of Inadequate Perceptual Processes

Children from poverty-depressed environments have poorer auditory discrimination skills when compared to their middle-class counterparts. (96, 98) Bereiter (19) has suggested that the absence of verbal stimulation in the home may be related to this problem. The significance here is that auditory discrimination between words correlates substantially with range of vocabulary (104) and reading skills (106). Grotberg (174) mentions studies by Sexton showing that of all achievement scores, the very lowest for lower class children is that of reading. The literature (23, 100) reports that although they lack learning rather than the ability to learn, up to 60 percent of all lower-class children are at least two years retarded in reading; this is true even of college-aged lower-class individuals (291). Says Deutsch (97), "Whatever characteristics are found in retarded readers will be found in a larger proportion of disadvantaged children than in middle-class children."

Some of the many other variables which do correlate with poor reading skills are closely related to low auditory discrimination (98); slow responding in various situations, e.g., the individual may know the answer to a question but requires more time to respond (97); inability to shift attention between sensory modalities as quickly (106); visual discrimination between English words (106); and poorer performance on a digit-span test, which measures attention and short-term memory (106). Lower class children also have poor expression in their reading (39) and tend to be inarticulate (368), a fact which could be due to covert teacher disapproval of the lower class dialect (131).

Segments of the literature, however, refer to combinations other than those of perception: inadequate education (101, 344, 112, 36, 300) and low teacher expectations of poor readers (171, 131, 326, 373, 341, 129, 109).

Cognitive Processes

Introduction

Studies of lower-class children have often shown a retardation of cognitive development (121, 335, 171, 166, 368) and educational readiness (243, 353, 204, 355). The most basic specific example is what Blank has called the lack of a "symbolic system for thinking" (28), a disability essentially the same as that referred to by others in terms of verbal handicaps (67, 274, 39, 18). The conceptually retarded child is ill-equipped for logical endeavors and is therefore less skilled with deductive than inductive approaches (109); much of his experience remains unconceptualized (174); he has difficulty drawing interpretive conclusions from contexts and pictures (39); and he often arrives at school either unable to express or unaware of basic information such as his name and address and number concepts (98).

According to Schwebel's (344) interpretation of Leontiev, internal mental actions begin with "demonstrated external action and the speech of the adult"; this plus interaction with the environment (290) yields conceptual learning. And it is these things which the literature points to as conspicuously absent from the lower class child's home: communication in general with the parents (376, 98, 105, 22, 281, 385, 97); and what communication there is of a concrete nature, rarely referring to abstractions (134, 98), logical sequences, or casual relationships (385). Additionally, little feedback (112) and few explanations (382) are directed at the child; he lives via a "pragmatic, concrete, personal and physical learning style" (174), rather than a conceptual one. Furthermore, as John and Goldstein note (105), "Learning labels requires selective attention", another skill in which the lower-class child tends to be disabled. In short, the child has inadequate habits of hearing, seeing, and thinking (183) confounded with poor visual and auditory discrimination ability.

Verbal Facility

Within the category of conceptual disabilities, verbal handicaps are the most important. Deutsch et al. (104), notes a very close relationship between language skills and I.Q.; they also report that "socioeconomic status is a more powerful determinant of language behavior than is racial membership". Not only does the lower class home lack verbal stimulation for the child, but it also lacks referents for new words. (98) The lower class child arrives at school with an inadequate vocabulary (22, 104, 19): at grade two his vocabulary is approximately one third the size of the average middle class child's, and by grade six it is about one half as large as what might be expected of normal children. (109) He learns many supposedly common words (e.g., "sink, chimney") 1 to 2 years later than the average middle class child (149) and has especial difficulty with action words (e.g., pouring) and words whose referents are rare in his home (e.g., caboose) (105). Lower class first graders show a lower total word output and less descriptive variety (104); inaccurate word inflections, immature vocabularies, frequent mispronounciations, a rare use of descriptive language similarly describe the speech patterns of college-aged individuals from a lower class background (291).

Classifying Behavior

One of the skills most basic to verbal ability is that of classifying or categorizing referents under specific labels. As analyzed by John and Goldstein (105), the acquisition of labels depends on stable word-referent relationships being observable in the environment and corrective feedback from more mature verbalizers: if a word-referent relationship is particularly ambiguous, as, for example, an action-word pair which does not refer to a specifiable object, then there is even a greater need for corrective feedback.

Black children aged four were found (105) to have difficulty in identifying picture referents of words the referents of which were rare in the lower class home (e.g., kangaroo) and action words (e.g., digging).

Sigel, et al. (351), in asking children to group familiar objects, found lower class children to make fewer overall responses and also to group things more subjectively and idiosyncratically than the objective, descriptive, representational mode of the middle class children. Both this study and the picture-referent study indicate lesser conceptual sophistication in the lower class child. Additional research also points to poor conceptual sorting and classificatory behavior. (215, 110, 385)

The literature seems to be largely in agreement with John and Goldstein (105) as to conditions correlating with immature grouping behavior: a combination of lack of stimulation and objects (referents) in the home (98, 19, 210, 385); and a lack of corrective feedback for the child's incorrect labels (22, 281).

A further detriment to the child's classification behavior, i.e., choosing items which belong together and then grouping them on the basis of some common quality, may lie in the lower class mother's way of setting down rules: she tends to give specific rules rather than principles--"simple imperatives" without statements of explanation (382, 196, 309); this would seem to add to the child's collection of uncategorized specifics.

Verbal Mediation

Still another facet of verbal abilities is that of verbal mediation, or the tendency to use language as an aid to thinking and problem solving: in this sense, language is unspoken excepting intraindividually.

One of the measures which has been used by researchers as an indicant of verbal mediation has been the success of the child in filling in words deleted from paragraphs spoken by the teacher or by lower class peers (104); although there were no differences between middle- and lower class children in completing a lower class peer's statement, lower class children were significantly less able to complete the teacher's statements with words appropriate to the context: Deutsch, et al., postulate that this may indicate a language barrier between the teacher and the lower class child. This study also showed that lower class girls were more adept at these receptive language skills than lower class boys, though the middle-class children do not show similar sex differences; the fact of girls more frequently having a same-sexed identification figure in the home may be related. (104)

Other specific disabilities seemingly related to verbal mediation have been observed in lower class children: they are poor at story telling (15) and show an inability to engage in social-dramatic play (309); Smilansky (364) states that the ability to imagine situations which do not exist is critical for understanding in reading, geography, and other school subjects, and Radin (309) postulates that this particular inability may stem from the lack of pretending games between the mother and child. Probably part of the problem results from the general lack of verbal stimulation (19, 102, 97) and family conversation (22, 344, 281, 105, 95).

Communicative Language

The most overt measure of a child's language skills lies not in classifying, or verbal mediation, but in his actual gross language patterns. Some state that the most obvious handicap of the lower class child is the absence of a communicative language. (258) Says Newton (290), "The standard form of a child's native tongue may be a foreign language for the child who has heard nonstandard forms throughout his formulative years". The fact of socially and educationally deprived parents (375, 134) leads to what Bernstein (128) has termed a "restrictive form" of language as compared to the "elaborated form" used in middle-class discourse. Also, communications in the lower class home are more commonly gestural (97), verbalizations tend to be temporally short and poorly structured (98), and language is used for concrete, as opposed to abstract, purposes (127, 19). All told, then, the lower class child lacks a repertoire of abstractions and transactional terms (127), is unfamiliar with "syntactical regularities and normative frequencies of the language" (102), and is accustomed to shorter sentence length and less sentence complexity (174), all of which relates to the fact that the lower class home is less verbal (97, 102, 385, 291, 22) and is, more specifically, less generous with feedback (98, 105, 22).

Beyond the restricted vocabulary, the lack of good language models at home, at school, and in the community (291) further leads to shorter sentence length (19), difficulty in ordering sequences (102), poor subject continuity (98), poor syntactical organization (97, 98, 19) and "mumbled, indistinct speech" (22). Bennett, et al., note, in short, that on almost all measured language dimensions, lower class children perform on a par with an average child a year or more younger. (17) In turn this, also, results in poorer listening habits and inability to follow more complex directions (39); and a difficulty putting meaning into context (102). Not only are such findings connected to the child's unfamiliarity with "long, orderly, focused verbal sequences" (102), but also to his own lack of active participation in conversation in lieu of "receptive exposure" to language (105).

Substantial evidence therefore is available to show that general verbal disability is overwhelmingly present in the lower class group: furthermore, the specific environmental factors which appear to be most related to this disability are the lack of verbal stimulation and adult-child interaction in the home.

Number and Time Concepts

Aside from the verbal, another large portion of conceptual abilities may be classified under the rubric of numerical skills. Judgments concerning time and number concepts have been found to relate to low socioeconomic class. (174, 183, 132) The lower class child is frequently unprepared to learn mathematics at the same pace as the middle-class child (121), as he has little concept of relative size (109) and a higher likelihood of lacking certain rudimentary concepts such as near-far, high-low, and number relationships (98).

Additionally, the lower class child does not have a time orientation as a "pressure source for task completion" and activity boundary (99); he makes poorer time judgments and displays lesser ability to meet time limits (98). Possible antecedent conditions are the fact of little time organization in the home and little adult verbalization connecting the past to present. (98) Possibly the whole matter of (verbal) conceptual unsophistication also relates to this inadequate judgment with respect to these concepts of relativity.

Personality Characteristics

In addition to the perceptual, conceptual, and language processes affecting personality factors such as low self-concept, deterministic attitudes, poor motivation and emotional instability also correlate with learning.

The Self-Concept

That lower class children suffer from poor self-concepts is well-documented (335, 368, 67, 263, 385, 65, 102, 101): they tend to equate social status with personal worth (173), a tendency which is helped to materialize by the contrasting status of figures seen on television (173, 134, 228, 311).

Evidence of the negative self concept can be seen, ironically, in compensatory grandiose behavior (65), as, for example, the loud and boisterous life style (67) and unrealistically high levels of expressed academic and vocational aspirations (67), this unreality being more extreme for lower class boys than girls (101). Other manifestations of poor self-concepts lie in the lack of concern for personal hygiene, diet, and personal appearance (39); the discouragement and feelings of futility (82); the need for authority figures in the classroom due to distrust of one's own judgments (109); the anxiety felt over achievement (67); and the fear of challenge (385).

An even greater sense of inferiority and humiliation is felt by the black lower class child. (222, 228, 101, 7, 134, 51, 405) Early race awareness (386, 134) and gradual perception of the greater society's discrimination (134, 67, 101, 112) soon lead to feelings of alienation and shame (385) and attempts to resist identification with the black racial group (405). Because of the generally matriarchal society and absence of a male adult from the home, black boys show greater unreality of occupational aspirations (101), suffer from role confusion (67), and show consistently lower achievement scores (101, 104) than do the girls.

Furthermore, a general societal prejudice toward the lower class is transmitted to the child via the teacher, who generally has low recognition, understanding, and expectations of lower class children (109); as Rosenthal and Jacobson (372) have found, teacher expectations appear to act as self-fulfilling prophecies and probably, therefore, play a role in maintaining lower class disabilities.

Further indications of the child's concept of self can be deduced from looking at his other-directed attitudes: there tends to be an "underlying attitude of depressive, and at times hostile, defeatism" (335), reactions of lethargy and suppressed aggression (67), a frequent lack of respect for the rights and property of others (39), limited trust in adults (385), a sense of external rather than internal causation (325), and a belief that others are to blame for one's misfortunes (109). In short, the lower class individual does not feel in control of his environment but completely controlled by it: this view of life is born early in the authoritarian home, which legislates abruptly and without explanation. (134, 309, 382, 67)

For the black lower class child, this sense of defeatism is stronger and more reactive: the black child shows his resentment and hostility by rejecting the majority group (67, 51, 385) and by additionally rejecting his own racial group (67, 7, 134, 222). The fact that the child comes from a home environment with little occupational mobility (95), and a male identification figure of a father who has not often experienced rewards for his accomplishments (101) only augments the child's feelings of alienation (420). He begins to feel hemmed in and craves excitement (67); due to his experiencing of early de-satellization from the home, he invests heavily in his peer group (134) and withdraws from involvement in school (67).

Motivation

The manner in which these feelings of low self-esteem and defeatism are related to learning disabilities is through their reduction of the child's motivation. The lower class child lacks initiative (180, 181, 335, 368, 67, 384, 98): "getting by rather than getting ahead is the rule" (385).

Antecedent conditions related to low motivation are the lack of rewards having been given to the child for his achievements (98, 101, 109); even more basic, the lower class child – especially the male black child – has no psychological concept of achievement resulting from effort (98, 67, 101). As opposed to stated occupational aspirations, when concrete action is needed, the child often shows very low levels of aspiration. (67, 222)

Lowered motivation of lower class children is especially conspicuous in the school setting: "rewards of schooling are foreign to their experience" (101; besides, lower class children seek immediate reinforcements (82, 385), and these are not offered by school achievement. Although this child's attitude toward school is essentially neutral upon arrival (98), and although his parents do want to see him get ahead (98, 385, 99), there is a lack of knowledge on the parents' part as to how to help the lower class child implement school success. Hess (195) notes that the child's orientation toward school results from the mother-child relationship and communicational patterns; but, as has been noted, there is little adult-child interaction in the lower class home (98) Subsequently, the child experiences early school failures and his parents lose confidence in the child's competence (98).

Another factor involved in lowered motivation is the common nutritional deprivation, which yields a generally low energy level. (22, 3) Additionally, the self-fulfilling prophecies of lowered parental (98) and teacher (368, 101) expectations serve to augment the situation.

Emotional Stability

Yet another psychological disability is the emotional instability engendered by broken homes (67), lack of overt affections (281), racial discrimination and segregation (54), lack of relevant support from the home or school, and greater likelihood of early school failure (100). Overall, the lower class child is prone to insecurity (82), emotional over-dependency (54), anxiety-withdrawal syndromes (67), lack of restraints (67), extreme bitterness (67), and an authoritarian personality (134).

It can be seen that low self-esteem, defeatism, emotional insecurity, and lowered motivation all serve to augment one another and to further endorse the goal of getting by rather than ahead. All the learning skills imaginable can hardly override this one disability – the why-bother attitude.

Impact of Learning Disabilities

Actual behaviors emitted by the individual can be viewed as disabling to the extent that they inhibit successful learning. Whether it is a disability or a purposeful action, the lower class child is selectively inattentive. (210, 102, 258, 375) In the school setting, this child's unfamiliarity with long and focused verbal sequences (102) and inability to follow more complex directions (39) yield serious learning setbacks. If a child is to attend to a verbal stimulus, it must relate meaningfully to his experience (97); often traditional teaching does not, and there is a resulting short attention span for school-provided verbalizations (102).

Jensen (210) reports that "attention develops through visual and auditory stimulation in conjunction with the parent-child interaction". The lower class home does not, however, necessarily reward persistence (101), and, furthermore, Deutsch (98) states that a noisy environment is ideal for learning inattention; lower class housing is crowded, substandard (95, 375), and probably noisier than typical middle-class housing.

In addition to his inattention, the lower class child tends to be hyperactive (210, 385), expressing his emotions in movement rather than words (309). His feelings of being hemmed in create a need for excitement and a resulting loud and boisterous style. (67) Additionally, as a result of being given specific rules at home without explanation, he lacks individualized inner controls. (309)

Although some researchers note that the lower class child lacks experience in disciplined group behavior (385), training with organized games (22), and general mannerliness (67), it appears nonetheless that the child precociously de-satellizes and involves himself with the peer group as a family substitute (134, 67). As a matter of fact, Clift (67) notes that due to the very earliness of peer-group importance, the lower class child may reflect peer values almost completely and have no sense of relating to the adult world; this would seem to be especially possible if the family involved itself in very little interaction, which the lower class does. The subsequent lack of socialization plus strong peer-group influence may together lead to the delinquent responses which Willie (420) has noted to be more frequent among lower class children.

A further behavior noted in the section in intelligence and which seems to be very highly correlated with the child's disabilities in his lowered performance on tests of intelligence when compared to his more affluent counterpart. (2, 171, 104, 174, 111, 103) The obtained differences in performance are also related to race which increases in significance with age (174, 103, 215, 171, 104) and also with socioeconomic level (103). Performances on tests of intelligence are also related to amount of verbal communication in the home (134, 22); presence of a father in the black home (103, 101); preschool education (103); sound discrimination, and total vocabulary range (104).

A progressive achievement-decrement phenomenon is also related to obtained scores on tests of intelligence (103, 210, 104, 126, 171), i.e., differences associated with various groupings (e.g., SES* or race) become more striking with increasing age. Deutsch and Brown, for example, found that preschool education is more successfully predictive of I.Q. differences in fifth grade than in first grade. (103) Accumulation of deprivational factors over time may be more important than accumulation within a time unit. (107)

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*Socioeconomic Status.

Because the performance on the test of intelligence is a measure of specific achievements, it is not surprising that socioeconomic class is generally related to achievement, with all lower SES children scoring differently from the norms and lower SES black children scoring significantly below the lower SES white children. (174, 98, 101, 180, 375, 171, 263)

The lack of school achievement is a further area of disability for the lower class child because of its impact on his sense of competency. (134, 109, 90, 174, 204, 101, 204, 99) Other pertinent factors relating to poor school achievement by the lower class child are little question-asking skill (98, 109, 309), this disability stemming from little question-encouragement from adults who have little time for parent-child interaction (98, 22, 195, 382); low teacher expectations and parental loss of confidence (95, 109, 129, 341, 372, 131, 325, 171, 385, 98, 99); poor school facilities (e.g., science labs, lighting, health facility) (344, 39); lack of communication between home and school (112, 99, 101, 98, 385); lesser physical health, i.e., either more frequent illness or malnutrition (95, 3, 347, 351); waste of much classroom time (101); and lack of experience before and beyond school (158, 109). The eventual result is a disproportionate number of dropouts from the lower socioeconomic class. (216)

The literature seems to suggest, in summary, that the single most important factor in perceptual, conceptual, and personality disabilities and their relationship to learning is the absence of extensive interaction with a verbally mature adult.

IX. THE CULTURE AND SCHOOL ACHIEVEMENT

This section examines the research findings concerning the patterns of school achievement among children who have developed disabilities for learning.

A survey of the literature was made and 53 articles were reviewed. The breakdown of subject areas is presented in Table 2.

TABLE 2. CONTENT AREAS OF RESEARCH ON PATTERNS OF SCHOOL ACHIEVEMENT AND NUMBER OF EXPERIMENTAL FINDINGS

Subject Area	Experimental Findings
Socioeconomic Status	10
Race	4
Self-Concept	8
Motivation	13
Intelligence and Abilities	9
Cumulative Deficit	11
TOTAL	55(a)

(a) The reason for the discrepancy between total and the number of articles concerning experimental findings is that several of the articles overlap in content areas considered.

Findings

Socioeconomic Status

Several studies of socioeconomic status have consistently found that as the level of socioeconomic group decreases so does the level of school achievement of its children. (68, 80, 86, 118, 198, 229, 284, 241) Dave (84) points out that it may be what is done in the home more than the actual socioeconomic status of the home that determines the achievement of its children. These influencing actions in the home are given as follows: achievement press*, language models in the home, academic guidance provided in the home, stimulation provided in the home to explore various aspects of the larger environment, intellectual interests and activity in the home, and the work habits emphasized in the home. It should be pointed out, however, that while these variables are not functions of social class status alone, different social groups characteristically have different degrees of these variables.

Several studies have designated specific areas of achievement that seem to be most affected by socioeconomic status. (68, 80, 198, 241, 284, 352) Areas of greatest difference between low-status and high-status groups were found in reading (68, 198, 241) and problem solving (68, 198). Other areas of differences were in geography and history (68), vocabulary (198), and conceptual ability (352). There was a difference of opinion concerning arithmetic skills for, while Hill and Giammatteo (198) found high-status groups 6 months ahead at the third-grade level in arithmetic skills and Montague (284) found lower-status students showed the lowest scores on the Arithmetic Concepts Inventory, Curry (80) found that as intellectual ability decreased the effect of socioeconomic status on arithmetic achievement did not increase as it did in other areas of achievement.

Race

Evidence supports the idea that differences in race are correlated with differences in scholastic achievement. (119, 228, 295) In one study differences in achievement matched those in intelligence. (119) Osborne (295) found that the differences in reading and arithmetic achievement between white and black groups of children increased from grade six to grade ten, with the white group performing near or at the expected national norm. Another study pointed out, however, that no matter how strong the correlation between achievement and race, there is still no evidence to support the idea that there is a difference in innate abilities between ethnic groups. (239)

Self-Concept

In the area of self-concept, researchers have found that the lower class child has a markedly lower self-concept than the middle-class child. (429, 228, 108, 74, 130) Not only lower class children but black children as a group have a negative self-concept. (119, 429) Moreover, self-concept directly affects amount of achievement in school. (201, 109) Horrocks (201) finds that the lower class child is given a needed sense of status by his outside peer group who tend to be a force against the school system. Thus, the lower class child and the black child develop a rebellious attitude toward school and will tend not to function within it; they will not achieve according to its standards.

Motivation

A number of researchers have found that children from lower socioeconomic groups are less highly motivated to achieve in school. (133, 228, 331, 29) In addition, several found that the level of motivation to achieve which a child reached in school was often determined by the values of the school that he attended. (69, 422, 134) Hence, if a school system is largely composed of children from lower income groups, the motivation for achievement in that school will correspond to that of lower socioeconomic groups as a whole. The depressant effect this kind of attitude is likely to have on achievement is particularly prevalent in segregated schools. (134)

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*Dave defines achievement press as the attitude in the home that motivates the child towards learning and expects certain standards of achievement.

Parental values have also been found to figure significantly in the formation of motivation to achieve in school. (379, 380, 412) One study found that 90 percent of the sons of parents who had an attitude of getting ahead were motivated to go on to college, while only 27 percent of the sons of parents with the attitude of getting by were so motivated. (219) This latter attitude is characteristic of lower income groups.

Motivation for further learning was also seen to be founded on previous successful achievement. (133, 29, 345) Hence, if a student has experienced largely failure in early school achievement he will not be motivated for future achievement and in turn continue to experience failure.

In general, one study found that a highly motivated student will achieve the most in the areas of arithmetic, reading, and science, but not to such a high degree in language function and social studies. (267)

Intelligence and Abilities

Evidence exists to support the idea that there is a strong relationship between achievement and intelligence as measured by various tests (verbal subtest of the Lorge-Thorndike Intelligence Test, California Test of Mental Maturity). (238, 267) In addition, educational-achievement differences between blacks and whites follow the same pattern as intelligence differences between the two groups, although there are greater similarities in comparisons between black and white infants and young children. (119)

Additional evidence, however, shows that group intelligence tests do not predict accurately a child's true capabilities so that ultimately they do not predict his ability to achieve. (33, 142, 211) These studies point out that perhaps children who may be classed as retarded have simply not learned the specific kinds of skills required for school learning and the skills on which I.Q. tests are based. In fact, some studies have delineated specific abilities that are deficient in the child but are necessary for achievement. (308, 414, 224) Poor readers were found to have difficulty in shifting attention between auditory and visual stimuli (224), making a cross-modal shift (308), and discriminating between sounds (414).

Cumulative Deficit

In the area of cumulative deficit it was found that, once a child has developed a deficiency, this deficiency is likely to increase over the years, particularly if he is a lower class or black child whose environment is extremely difficult to adjust to the right degree at such a late time in the child's development. (241, 295)

The importance of the establishment of requisite skills before tasks of increasing difficulty and complexity can be handled by children was put forth by several researchers. (30, 340, 234, 295) Bloom (30), Deutsch (340), and Kirk (234) also stressed that by beginning as early as possible in the child's education to teach fundamental skills on which to build, much could be done to prevent an increase in deficiency of any one skill and the detrimental effects likely to accompany it.

Osborne (295) found, in comparing whites and blacks, that in reading achievement the difference between the groups was two grades at the sixth-grade level but increased to three grades at the tenth-grade level. In arithmetic reasoning the difference went from one grade at sixth grade to three grades at the tenth-grade level, and in arithmetic fundamentals the difference increased from one grade at sixth grade to two grades at eighth grade to four grades at tenth grade. As can be seen, the black child not only fell behind his white classmates, but he also made no progression over a period of years especially in arithmetic fundamentals. In this area, the black child was 1 year behind sixth-grade white students and only achieved sixth-grade level 2 years later. However, in another 2 years he made no advance at all, remaining at the sixth-grade level while white students were by now at the tenth-grade level.

What is most important for the purposes of this paper were the findings that such low achievement, accumulated over a period of time, leads to a failure of the school to function for the child. (29, 340) It has been shown that early failure in school leads to a negative self-concept, which accumulates over time (135, 130), resulting in a child who seeks status in his peer group – often an antischool force. (201) Ausubel and Ausubel (134) note that the typical mode of child reaction is one of lethargy and submission to the educational system once he is faced with continuing and increasing failure. Deutsch (98) finds that with continued failure the whole school experience becomes negatively – rather than positively – reinforced for the child. Finally, one study found that among factors contributing to a student dropping out of school entirely, as early as the ninth-grade level, was a low level of reading achievement. (29)

Conclusions

The lower class child and especially the lower class black child, enters school with low and unstable concepts of themselves and low motivation for achievement in school. These factors plus the amount of deficiency these children have in basic skills result in initial failure to achieve in school on the basis of all three factors. Group intelligence tests have been found in some cases to be nonpredictive of a child's ability, but nevertheless, on the basis of early failure and low scores on I.Q. tests, many children are classed as retarded or slow at a very early age and remain so classed. This may be, in fact, an artificial retardation in that the child's actual deficits have not been discovered. Failure on all these grounds has been seen to be cumulative over time and self-perpetuating in nature. These children fall further and further behind grade norms until, finally, the school experience becomes meaningless to them and they withdraw, either through complete rejection of the system by dropping out, or submissive nonparticipation in the learning process.

X. CULTURES CHARACTERIZING DEPRIVATING CONDITIONS OF LEARNING

Introduction

The purpose of this section is to sketch a brief picture of three subcultures in our society whose homes are characterized by unemployment, poverty incomes, and low educational status. Implicit in the discussion which is to follow is the premise that a high probability exists that such cultures because of the very nature of their level of socio-economic status, have large incidences of the conditions of environmental deprivation which depress the development of skills relative to school success. Accordingly, children reared in the cultures also have a higher than normal probability of accruing the sets of learning disabilities described earlier in this report.

The intent of this section is to describe and document samples of the conditions of deprivation permeating throughout the cultures and to underscore the reality of poverty and its potential impact on the development of the children. The cultures to be described are the inner-city black, the rural white, and the inner-city white. The conditions of their existence are real and can easily be generalized to Ohio, an Industrial-Metropolitan-Agrarian state.

The reasons for selecting these cultures is because of the incidence of poverty in Ohio's large metropolitan areas and the economically distressed rural parts of Ohio. The condition of the inner-city cultures as depicted in this section can be found in Dayton, Columbus, Toledo, Cincinnati, Cleveland, and other metropolitan areas in Ohio. Moreover the conditions of rural poverty are not unlike those in the southeast section of our state often called Ohio Appalachia.

The Inner City Black

The Family

The family is the basic institution in our society and the one which has the greatest influence, since it is here that education begins years before other institutions reach the child. Moynihan in his report, *The Negro Family,* shows that almost a quarter of urban black women are not living with their husbands, and illegitimacy rates account for one-fourth of all nonwhite births. Presently females head one-fourth of the households. (285) Elizabeth Herzog (285) summarizes the reasons for the absence of the adult male from the home as follows:

> The man who cannot command a stable job at adequate wages cannot be an adequate family provider; the man who cannot provide for his family is likely to lose status and respect in his own eyes and in the eyes of others – including his family. His inability to provide draims him of the will to struggle with continuing and insuperable family responsibilities. It is an incentive to desertion, especially if his family can receive public assistance only when he is gone.

Herzog's interpretations are also supported by the following statistics given in Schuchter (343) concerning earning power and education. In 1939, black wage and salary income for all workers was 41 percent that of white workers. By 1960, it had risen to 60 percent of white income. However, the average income for a black family with a male head who had finished high school was less than that of a white male who had finished eighth grade. Black high-school graduates get only 60 percent of the lifetime earning of white high-school graduates; and black college graduates earn about 50 percent of the lifetime earnings of white college graduates.

Schuchter also shows that one-fourth of adult blacks are essentially illiterate and that three-fourths of the adult blacks have had no high school education. Since few, if any, middle-class educated blacks live in the ghetto, it is highly probable that the ghetto child has little or no personal contact with adults who have been educated past the eighth grade. It is likely that a person who meets with success in any endeavor will leave the ghetto, thus, leaving the child with people who do not clearly realize the importance of certain types of interaction with the child. The child then sees only black people whose patterns of success in the subculture do not always reflect behaviors which, if imitated by the child, would be particularly helpful in adapting to the larger culture.

The absence of a successful adult model is not the only condition which affects the normal development of the black child. Radin and Kamii (310) report a study consisting of 44 lower class black mothers and 50 middle-class white mothers, all of which had 3, 4, and 5-year-old children, in which several differences were noted in child-rearing practices. The black mothers were anxious for their children to become physically independent, that is to be toilet trained and able to feed themselves. These mothers wanted physically independent children yet they didn't want emotionally independent children. They were very protective and intruded upon the private life of the child. The black mother had little respect or confidence in the child as an individual. The black lower class mother was shown to be suspicious of the world and didn't feel the child was capable, or ever would be capable, of solving his own problems. The middle-class mother on the other hand was found to be interested in exposing her child to challenging problems and encouraging the child to cope with them. The middle-class white mother also had respect for the child's privacy. The lower class black mother was characterized as a person who was reluctant to acknowledge problems or problem areas. The lower class black mothers were shown to be impatient and seldom listened to their children. On the other hand, Deutsch (98) reports that ghetto parents have the same aspirations for their children as middle-class parents. The only difference is that the lower class parents are not aware of the operational steps which a child must go through to become a success. When children ask questions, the parents are often reluctant to answer due to their poor academic background. If the child doesn't ask questions at home he is less likely to learn the importance of this behavior in school. If he doesn't question his teacher when he fails to understand something he will quite naturally fall behind.

Impact of Cultural Disparity

Another factor, that of the discrepancy between the child's culture and the white culture has an impact on the child's sense of identity. For example, the child is very aware of the other world via TV especially – and it is obvious to him that he is not a part of that world. (71) The child has difficulty accounting for the fact that white children have big houses, green lawns, and the quiet, tree-lined neighborhoods, whereas his surroundings are characterized by dirty, noisy streets and overcrowded apartments. In addition, to the perceived differences, black parents confess to much anxiety over explaining to their children what it means to be black. (301) Not only is the parent implying to the child that he will be a failure – he is also readmitting his own failure. The children of the ghetto are also aware of what failure is and its effects. When they look at their houses, streets, children, and neighbors, failure is evident. Black children are also aware of race differences by the time they are three years old. (66) The many that come from fatherless homes also have special problems. It has been shown that they tend to be less accurate in identifying sex roles, judging time, less socially responsible, less oriented toward achievement and very likely they will become delinquents. (301, 353) The child's knowledge of the world is also limited. This view of the outside world is via TV and movies – almost exclusively. He has few opportunities to observe landscape settings and natural beauty. (98) The home he lives in is characterized by the constant blare of the TV, few toys and books, little variety in stimuli, and a language that is different from that of the larger culture. (327)

Middle-Class Ethnocentrism

Another factor of importance, is the ethnocentric* behavior patterns of white people. The white middle-classes' racial status gives one the opportunity and position to be paternalistic – to give or not give. (66) Those who have tried to change the conditions of the ghetto and its people have usually been missionary in their nature – essentially there is little difference between the nineteenth-century missionary and the mid-twentieth century missionary. They both have in common an ethnocentric base from which they work. Mostly, those in the present day missionary work are from the middle class. (435) This missionary work further emphasizes the superior and inferior positions in our society. The black child is well aware of his color and his consequent rejection from the mainstream of society. This is reinforced by the heavy burden superior people say he is putting on the community. (65)

This notion of social class bias also extends to the school. Most of the teachers are unaware of the ghetto culture – they are from the middle class and are unable to communicate effectively with the lower class black child. (314) The middle-class teacher has a different language pattern than the child, he dresses differently and thinks differently. (140) Teachers traditionally are expected to be examples of middle-class virtues and abide by middle-class standards. (314) The middle-class teacher and the ghetto child probably experience the same amount of culture shock when they first meet in the classroom. The teacher's effectiveness in the classroom, especially in upper grades, is difficult and often diminishes their confidence in their ability to work in the black-ghetto schools.

According to Kneller (140) the values taught in school are alien to the lower class black child. Since his values and the schools are not often the same, he feels like an intruder. The textbooks are written for middle-class students. The subjects taught in school probably have little or no value in helping him cope with the realities of ghetto life. In addition, parents have been found to view the school with pessimism and suspicion. These parents have often had unrewarding school experiences and feel that the same will hold true for their children. It is questionable whether the parent has the capabilities as well as the willingness to help the child. Parents are characterized as feeling powerless in the sense of helping the child educationally.

Health and Nutrition

The health and nutrition of the child is also of importance. The black child has passed a major milestone when he reaches age one, if one considers the high rate of infant mortality among blacks. In 1962, infant mortality was 90 percent greater for nonwhites compared to whites. (430) In the early years childhood diseases such as whooping cough, meningitis, measles, diptheria, and scarlet fever are the major killers. (301) The conditions of the ghetto, poverty and disorganized families, crowded housing, little privacy, fetid odors, and bugs are reasons given for these diseases. (301, 282) Of all the poverty areas in the United States it is in the urban slums, with inadequate sanitation and nutrition, that the toll is the greatest. (301) In a report by the Agriculture Department in 1968, 20 percent of U.S. households were said to have poor diets – the report compared this study to a similar one in 1955 which showed 15 percent of U.S. households having poor diets. (147) In another 1968 government report, U.S. households with incomes under $3,000 – 36 percent had poor diets and 27 percent had fair diets. (147) Incident and death rates range far higher for the black than the white. While the following figures are for all blacks it is safe to assume that the majority are from the inner urban districts since this is where the nation's largest percentage of blacks live. Death rates for pulmonary tuberculosis are four times as high for blacks as for whites, and incidence rates of active cases are three times higher for blacks. (301) In addition, health care for the black is described as often inadequate. (430)

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*This refers to the tendency of whites to regard the values of the white culture as superior to those values in other subcultures.

Self-Concept

The impact of the conditions previously noted concerning the black child is probably most significant in terms of his feeling of inadequacy. Many children have fantasies of being white. (65) Kenneth B. Clark (66) states:

> The degree of whiteness that the Negro prefers may be considered an indication of the intensity of his anxiety and of his need to compensate for what he considers the deficiencies of his own skin color.

On TV he sees white people who are a success. It should not come as a surprise that the child sees himself as a failure before he even gets started in life. As one author put it, "It is economically 'bad' to be poor and it is socially 'bad' to be a black". (192) As stated earlier, the child learns the disparities between his neighborhood and that portrayed on TV and in the movies. These media have been found to help reinforce the child's attitudes about himself. (66) The results of seeing what others have and what he doesn't have results in negative feelings about himself and his color. The following are poignant examples. In a coloring test which asked children to color male or female figures the same color as themselves, 29 percent of the medium- to dark-brown-skinned children colored the figures white, yellow, red, or green, yet they were able to color correctly an apple, leaf, orange, and mark the appropriate color. The researcher's conclusion was "Because they wanted to be white, they pretended to be". Allport (5) relates a study where black and white children were given the task of distributing different types of doll houses and doll clothing to white and black dolls. The majority of both white and black children gave the white dolls the better clothes and houses and the black dolls the poorer clothes and houses. (5) In addition to the black child preferring whiteness in himself (fantasies about being white) he usually has negative feelings toward other black children. (66) The black child is early aware of racial differences but it is in the early school years he learns which race is preferred and which rejected and assimilates these into his system of ideas about his society and his part in it. (66) Goff (315) neatly sums this assimilation up and relates it to behavior:

> The aggressively competitive and stratified American culture places value on personal achievement, independence, liberty, and power. The esteem in which the individual holds himself is directly proportionate to his feelings of mastery of circumstances, power over events and prestige and acceptance among men. Such cultural demons, established values, have direct bearing on personality, being in fact, motivators of behavior.

Rural White

Introduction

A report by the President's National Advisory Commission on Rural Poverty (299) has found the following trends affecting the employability of the rural white population. In recent years new farming technology has increased total farm production substantially. It has also decreased farm labor rather dramatically. Farm labor has been the traditional form of employment and now it is quickly vanishing. Industry is usually not attracted to rural areas because of the low education attainment of its populations, the lack and cost of transportation facilities, and the scarcity of public services. Coal mining used to be a major occupation but other fuels and new technology have increased unemployment. The result of this unemployment is that a substantial number of rural Americans are poor. There is more poverty in the rural area proportionately than in the cities. The metropolitan areas have one in eight poor, the rural has one in four. Approximately 40 percent of the Nation's poor are located in the rural areas.

Level of Education

Educational attainment in the rural culture is low. A very substantial number of rural adults have never enrolled in school. (299) The rural adult male has on the average 2 years less education than urban adult males. (336) In 1960, millions of rural youths, ages 14 to 24, had dropped out of school before graduating. Millions of rural adults have had less than 5 years of formal education and are classified as functional illiterates. During the last census, the average years of educational attainment for the urban population 25 years of age and older was 11.1 years; the same population for the rural area was 8.8. Very few rural poor have attained even this much education. In a study published in 1967 which compared 154 ninth grade rural youth with regard to special educational needs to 169 ninth grade students from more affluent cultures, the following was found (437):

- "1 in 7 ninth grade students in rural Ohio high schools was considered to have special educational needs"

- The greatest number of students were considered to be academically handicapped, educationally deprived, and economically and socially disadvantaged.

Whereas kindergarten has been found to be a successful addition to the educational process it is not represented in the rural areas as in the urban and, for what facilities there are, the enrollment rates compare unfavorably with urban rates. (335) Generally the rural school is not characterized as having a high quality. (299) Better than one-third of those tested from Appalachia by the selective service fail the mental tests. (357) Rural students are cited to be scholastically behind urban students and less likely to attend than their peers in the cities. (337)

Some of this low educational achievement can be explained. The National Advisory Commission Report (299) finds that although approximately 20 percent of the Nation's public schools are located in rural areas, the physical facilities and teaching staff have not been equal to that of the cities. There are still a large number of one-room schoolhouses in operation today – most of them are in rural areas and many have outside springs plus no running water. The percentage of rural teachers not certified is twice that of urban teachers. In addition, educators feel that the schools are not equipped to teach and treat the special problems of the rural youth.

Health and Nutrition

Another characteristic of this culture is the incidence of illness and injury. (338) When illness and injury do occur, medical facilities are not sufficient to treat the injured and the sick, and a longer than normal recovery time usually ensues. This condition places an economic strain on those involved. Complicating the conditions is the unavailability of medical services. (299) Thirty percent of the U. S. population live in rural areas but only 12 percent of the Nation's doctors, 18 percent of the Nation's nurses, 14 percent of the Nation's pharmacists, 8 percent of the Nation's pediatricians, and 4 percent of the Nation's psychiatrists live in those areas. One-fourth of the rural poor have never seen a dentist. The rural area has the highest rate of work-related injuries with three out of five deaths attributed to accidents. Injuries and illness often result in long unemployment and push the family deeper into debt. Malnutrition, also, is widespread in these rural areas. Results of this are well known and some are previously noted in this report. Malnutrition itself can be the result not only of unemployment but of simply oversized families which strain the meager incomes. The birth rate for rural families is larger than the national average and creates an additional hardship for parents and children alike.

In addition the Advisory Commission's Report (299) cited previously found that the clean farm house of the white is not characteristic of the rural poor. Most of the rural poor don't even live on farms. A significant proportion of rural housing has been classified as substandard. Running water in the house is not a dominant condition with approximately 30 percent of the rural population still using the outside spring.

Personality Characteristics of the Population

The people are characterized as suspicious of strangers and especially of government people. (306) The suspicion is also directed toward the school. In many areas education is not valued. (336) The majority of rural, low-income families have little confidence in their own effectiveness and ability to shape their lives. (299) They resign themselves to their large families and the resulting burden, with the same fatalistic attitude they face in their poverty. (299) The suspicious nature they have toward strangers and government is probably a result of the lack of influence in structuring their lives and communities. In a study to ascertain the elements of family living which were satisfying to the low-income families in the economically depressed rural areas, the majority didn't feel they were dissatisfied with their family life. (438) The families studied were cited however to have low aspirations for economic success. They were thing-oriented and placed a higher priority on consumer goods than on residence. The conclusion the investigator reached, however, was that the families have adjusted their desires to what is available to them.

Home Conditions

Within the home, the climate is not conducive to educational pursuits. Knowledge of the outside world is limited and reading material scarce. Poor rural families do not generally see education as being particularly beneficial and this attitude probably has some bearing on how the young interpret the utility of school activity. The older generations in Appalachia were very often miners and earned livable wages without an education. Many Appalachians today, both young and old, have a disregard for educational needs. (421) These influences are probably especially strong in the many families containing several generations in one household. (299) A large number of household heads in the rural poverty areas are 65 years of age or older. (299) Kinship, therefore, has been shown to be of great importance in rural areas with great respect for the elder generations. Conceivably, this would result in the depression of the value of education on third-generation children. (336) This premise is borne out with studies which indicate that children in the rural poverty areas attain about the same educational level as their parents. (383, 337)

Inner-City White

Introduction

The anthropological data on the white, inner-city ghetto is rather conspicuous by its absence. Most agree, however, that the majority of them are Appalachian migrants. Appalachians are leaving their homes and migrating north at a reasonably large rate to the large metropolitan areas. (398) They go where they hear work is available. They are transient in the sense that they do not come to stay. Although they come north because there is no work at home they are quick to return if a job opens up at home. They come usually with little money, no advanced job offers, and lacking in marketable skills. Their backgrounds, school, church, and family do not prepare them for the transition from rural to urban life. (311) There are few if any similarities between the rural and urban setting. In the city they live in apartments but in the country they probably lived in a house. Although the house may have been in poor condition, it was not as confining as an apartment. No matter how poor Appalachia is in material wealth for its inhabitants, it is abundant in a natural beauty which is lacking in the city. The city, especially the inner city, is crowded compared to their sparsely populated homeland. The disparities between the two environments could be extended still further, but the point has been made and it is clear that the Appalachian migrant is disadvantaged when he attempts to adjust to the urban community. Essentially he is moving from one subculture to another. He cannot survive in one because of lack of employment opportunities, and he probably will not be able to survive in the other because he is not equipped to take advantage of the opportunities which are available. (312)

Employment

Employment is a major key to the problems of all poor people, but it is especially important here since it not only determines the families' housing, neighborhood, and nutrition but in the case of the Appalachian migrant it often means frequent moves within the city and also from city to city. It is not difficult to recognize the effect these numerous relocations can have on a child. Since the typical migrants are from 18 to 30 years of age it can be assumed that the children are often in their first years at school. (398)

The migrant not only is unfamiliar with the social services available, but he often does not accept them because he believes it is only a matter of time before the mines or some other type of work will open up in his rural area. (10) Because of his lack of educational attainment he not only can't get a job but, he is in no position to call attention to his situation. (398) Psychologically he never feels settled in the city. A Vista worker wrote that a major milestone is reached when a man signs a year's lease on an apartment and stops renting by the week. (398)

Level of Education

The educational aspirations these parents have for their children reflects rural-area concept of the utility of education. One Chicago principal, whose main enrollment is Appalachian migrant children states that "the parents don't encourage the importance of daily attendance". (10) He reports that the attendance of Appalachian migrant children is 10 percent below that of the average attendance in Chicago schools. In a study of 46 white and black urban children in poverty areas, it was found that the black parents were more concerned about their children's school work than the white parents of similar economic status. (228) Again this seems to imply that the Appalachian migrant is not trying to find his way into the mainstream of urban society, but rather waiting for an opportunity to go back home. The poor black in the urban districts, on the other hand, has aspirations to raise his status within the urban culture.

Self-Concept

The effects of urban poverty on the child's sense of competence are much the same as they are for the black child, with the exception that the white child is free of the problems associated with discrimination and color. Many of the children living in this environment view their world as hostile and untrustworthy, and deny and avoid responsibility, a typical reaction to negative self-identity. (260) They are alienated from the larger society and are shut off from the rural society their parents talk so fondly of. (333)

Appalachian children, like black children in this environment, are aware of their life conditions as compared to that of larger cultures. TV and movies are vivid reminders of what they don't have and they soon learn to see themselves as being different in terms of what they have in a material sense as well as what they have in terms of the abilities which permit them to be successful achievers. One writer feels that children brought up in the poverty environment and consequential unfavorable developmental conditions are very likely to have basic distortions of what it is they have the potential of becoming. (260)

There is no doubt that the migrant child is disadvantaged but the nature of his learning disabilities and how they compare with the poor urban black child is left unmentioned in the literature. There are probably few differences in terms of the quality and the frequency of parental interaction with the child as well as other depriving conditions which prevent normal development. Relevant to the child's development, there are probably very few unique differences, other than color, that distinguish the learning disabilities the children develop as a result of being reared in these poverty-depressed environments.

XI. IMPLICATIONS FOR EDUCATION

The purpose of this section is to suggest what implications can be drawn for education on the basis of what we now know about learning disabilities and school achievement of children from poverty-depressed cultures. Consideration will be given to three broad areas: school-home relationships, teacher values, and measurement of student progress in the classroom.

School-Home Relationship in Poverty-Depressed Areas

Introduction

There has been little research as to how preschool education programs can be implemented in neighborhoods in which children are surrounded by deprivating conditions. There have been no studies which suggest ways in which the cooperation of community leaders and parents from the neighborhood can be elicited. Head Start, however, was successful in the eyes of the parents, and this finding may have resulted simply because a commitment was made to get in and do something. The effort was backed financially by the Office of Economic Opportunity and the nature of the commitment of funds could be made in advance.

Another factor affecting the success of the program is one of human relations. When references are made to the conditions which surround the homes of the children as the reasons for the children having difficulty in school, the parents are quite likely to become rather defensive. It has been repeatedly noted that people in the black inner-city community, in particular, have high aspirations for their children's success in school. It was also noted that they do not accept failures as being the results of their immediate surroundings or themselves. They view external factors well outside of their control to account for their failures and those of their children. More often than not, the school is the target of this kind of logic. These prevailing values strongly suggest that direct references to deprivating conditions in the homes as the causes of school failures of children will be resented quite handily by the parents involved.

Another factor is the probability that teachers who do not thoroughly understand the culture and value structure of the homes may well convince themselves that any efforts to involve parents will not be particularly advantageous to the school, the children, and the classroom. This problem is also confounded by the attitude that the parents hold toward the teacher. Parents from depressed poverty environments do not feel a close relationship with the teacher and often view him as a person dealing with discipline rather than helping the child with a learning problem. A study by Hess (194) noted that while a middle-class parent would probably develop the concept of the teacher as a friend and a helper in the learning process, lower class parents on the other hand would probably stress how to avoid trouble with the teacher. If a teacher treats parents as if they were disinterested and apathetic, then they may indeed behave that way in the future. (208) This is like the Rosenthal effect* on the performances of children. On the other hand, if the teacher looks beyond the parental behaviors and understands them in terms of the value structure of the culture, he takes a crucial first step in establishing rapport with them. From such an understanding, he will become more knowledgeable in his view of the parents as potential contributors in the educational process of their children. If he can then obtain the information and knowledge he needs in order to help the parents succeed, he will have diminished considerably the probability of discouraging the parents' efforts in this area.

Three concepts would be derived from an objective and knowledgeable understanding of the culture. The first is the possibility of reversing the tendency to attribute the failures of the child to external factors. To overcome this obstacle the parents must gain an understanding as to how the activities of the school contribute to the development of the child. If they see and understand what the educational process is committed to do at the preschool level and observe some of its early successes, they will soon see that the development of the child is not a natural thing which can occur independently of meaningful planned experiences. It should be noted, however, that samples of the successes, or what the child has learned to do, must be something that the culture agrees is of value to the children. Once this concept is established and the parent rejects the notion that failures are outside of his control they are more than likely to begin to entertain suggestions from the teachers as to how to reinforce and help the school realize its goals. Once they see the fruits of their own efforts the cycle becomes complete and a more positive attitude emerges through a more constructive way of behaving. This would be the first benefit resulting from knowledge of the culture, the second would be the acceptance of the school as a positive change agent, and the third would be the added benefit of extending the educational process from the school culture into the home of the child with the parent. The support of the community and the involvement of the parents is crucial and the school clearly has the responsibility to manage conditions which makes this possible.

School-Community Relationships

Massive community-action programs are needed to involve parents with the school program. Community programs should involve not only the parents and school personnel but also business and civic leaders and community organizations. Schools should strive to become the cultural center of the community by initiating community self-analysis and betterment. (93)

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*The study found that the expectations of teachers concerning how well children are able to do in school affects subsequently the performance of the children.

A community-development program in a depressed poverty area of St. Louis undertook a program of presenting parents with the facts of cumulative deficits in learning. (160) The motto for the parents became "success in school is your child's most important business". The school symbol became "Mister Achiever" and teachers were instructed to view each child as if he had superior ability. An effort was made to build an image of the black man at work by visiting various businesses where blacks were employed in semi-professional or professional roles. Community members were encouraged to report any suspected truancy. Parents were encouraged to help their children find a place to do homework. Results showed significant gains in achievement for the students involved in the project.

The school could take responsibility for planning trips to various places of interest in the city for the parents. Museums, zoos, art galleries, and other cultural activities are rarely attended by the parents. Planning sessions should be devoted to a description of their destination, how to dress, and guidance for a variety of social situations. These trips will often inspire parents to plan additional ones on their own. The coordinator of such programs could also plan trips to business establishments to increase parental knowledge of vocational opportunities and to learn what vocational skills their children will need. Parents might be motivated by talking to someone of their own race or culture who "has made it".

An elementary school in Chicago prepared a booklet entitled *"Neighborhood Aids"* for parents. (208) The booklet contained lists of names and addresses of health services, social-service agencies, legal-assistance agencies, nursery schools, counseling services, and recreational and cultural agencies in the larger community.

Doughtery (83) reports a project in Chicago which began programs to facilitate other areas of parent-school cooperation. Staff members included a school social worker who made home visits and provided family counseling. A home economist provided lessons in home management by using the community as a laboratory. Trips were made to supermarkets, department stores, school cafeterias, model apartments in housing developments, and utility companies. A youth-activities counselor increased parental involvement in student activities. A parental-education counselor worked with parents in school-oriented programs. She planned meetings at local recreational centers in order to expose parents to facilities that were available to them and conducted tours of local business establishments to make them aware of employment opportunities.

The school can be used as a vehicle to inform parents of school-parent activities and meetings. Communications can be sent home with pupils. P.T.A. volunteers can inform parents of coming events.

School-Parent Relationships

School-wide programs need to be developed to bring parents into closer contact with school personnel and educational programs. Parents living in the ghetto seldom become involved in their children's school activities or in school-parent groups such as P.T.A. Often their own experiences in school recall feelings of rejection and failure. Hess (194) pointed out in a recent study that working-class mothers feel that they can do little to improve schools and that they have limited influence in determining school policy for their children. The schools may discover that many of these parents want to help their children but just don't know how. (208) For this reason it is very important that the schools take the initiative in bridging the gap. Concerned school personnel who are willing to devote time and energy are essential to any program. It is up to the principal to organize programs that will involve the school staff and parents in cooperative activities. The aim of these programs should be to

- Help parents better prepare their children for school
- Improve the emotional and intellectual environment of the home
- Help parents see the importance of school.

Fusco (208) reviewed school-parent programs in large metropolitan areas (Chicago, Baltimore, and Detroit) which enjoyed some success.

In Chicago some schools have set up interviews between the parents, child, and school personnel at the time of enrollment. This enabled the school to explain the learning program and to establish a friendly relationship.

An elementary school in Baltimore set up a series of meetings to help parents better prepare their children for school. Under the guidance of the principal, a committee consisting of teachers, school nurse, home visitor, and a social worker conducted meetings consisting of brief presentations followed by small group discussions. They called attention to child-development tasks and offered suggestions for promoting child activities that could be carried on at home. The social worker and home visitor informed the parents of community resources.

An elementary school in Chicago used group conferences by grade level to help parents understand ways in which they can reinforce school activities. Principals, teachers, and pupil personnel were all involved in the planning and implementing of these conferences. A Detroit school conducted a series of meetings between parents and school personnel which dealt with how parents can better prepare children for school and how they could deal with child behavior they had not understood.

Other schools have developed programs to help parents better understand school programs and show them how to help their children at home by bringing the parents in to observe and participate in school activities. A nursery school class in Detroit requires that a parent for each child assist the teacher. This not only helps the teacher but also actively involves the parents in learning activities. In addition, monthly meetings are held in the evening between the teacher and parents to discuss early child growth and development. The teacher will discuss parent-child activities that can be carried on in the home. The parents are encouraged to share with others their personal accounts with children in the classroom.

A program in Baltimore for preschoolers was established to help the parents prepare their children for school. The classes were held for 2-1/2 hours one morning a week for 30 weeks. Children could not attend unless accompanied by at least one parent. During the classroom sessions, parents would observe the activities and record their reactions. In the final hour of the 2-1/2 hour session, an assistant teacher would supervise the children while the regular teacher conducted a discussion group with the parents. The parent kept written records of his child's home-learning activities which the teacher read and commented on weekly. One of the supervisors of the program referred to it as "practice teaching in parenthood".

In another project in Baltimore a school social worker was added to a school in an effort to reach "unreachable" parents. During visits to these homes the social worker discovered that the parents really wanted to cooperate with the school but didn't know how to go about it. Aid was enlisted from the Adult Education Department to set up a small class for a group of 10 parents. Topics of discussion included organization of household tasks, meal planning and nutrition, clothing construction, managing a budget, and filling in job-application forms. The social worker also planned a series of meetings with the teachers to provide them with insights into the behavior of the children.

Parents can supplement the schools efforts by better preparing their children for school. They should be urged to read daily to their children and to discuss pictures in magazines and books with them. Children should be led into discussions of every day happenings such as what they did at school or play. It is very important that the parents contribute more to the child's language development. Parents can help improve the child's cognitive development by counting objects with him. They can also help their child discriminate between colors, sounds, and shapes. Parents can help develop the child's attitudes toward the teacher by presenting her as a friend and helper, not just as a disciplinarian.

Parents should be trained in concrete ways they can help their children prepare for school and achieve in school once they have started. Activities to help the child prepare for school can be taught through observation classes and through home demonstrations. Teachers can prepare programs to inform parents of exactly what and how their children are learning in school.

The Special Case of Teacher Values

Introduction

A very crucial characteristic of teachers is their understanding of, and reaction to, attitudes and values of the culture. Public schools and teachers in general are middle-class orientated and often find it difficult to reach and teach lower class children. A study among teachers in New Mexico, where many sociocultural differences among students exist, pointed out a lack of awareness and sensitivity to different social and cultural backgrounds. (397) Results showed that the areas of greatest teacher awareness were to the overt behavioral practices and artifacts of the different cultures such as language development and home environment. Yet they seemed to show little awareness of how the sociocultural factors affect the classroom behavior of the students. They felt all children regardless of background should be taught the same curriculum using the same methods and materials. The teachers also showed very little sensitivity to the child's psychological needs.

It appears imperative that teachers of the disadvantaged not only have sufficient knowledge of the culture and home environment of their children but also be able to apply this knowledge to the classroom situation. Teachers must be able to adapt their style to different student groups. **Poverty children can't be taught the same curriculum or with the same methods used with middle-class children.**

How Teacher Performance Should Vary

A successful teacher of the disadvantaged must become a student of culture, not a judge. (159) He must look at the culture from an anthropologist's point of view in which he learns of the culture's values and aspirations, and understands the reasons for its attitudes and actions. He must understand the reasons for the child's cumulative learning deficit.

Ethnic-group membership will often determine the child's image of himself and his world. Parents with negative identities of themselves will often pass these on to their children. A study reported by Goff (130) showed that the poverty child's negative self-concept increases with increasing age. Self-concept is dependent largely on adult-child interaction and, in the school, the initiation of effective interaction falls upon the teacher. (184) To foster a positive development, the teacher must be aware of the factors involved in the declining self concept both in school and out of school. The self-fulfilling prophecy should be understood and avoided. The way the teacher views the child will determine in large part how he views himself. He should view each child as being able to learn and should provide experiences of learning in which the child can feel successful. These children have a great need for successful experiences, and the teacher should create a success context in the classroom. Activities should be planned in which pupils will have success regardless of their academic status. Learning tasks should be provided that do not call for a single right answer. Teachers should capitalize on the individual child's abilities. Goff (130) states "that the school might recognize the role of feelings of competence in physical activities from the point of view using these initial security reactions for the development of generalized feelings of adequacy".

The children need constant motivation but the teacher must keep in mind that these children do not react to praise, competitiveness, and pressure as do middle-class children. The children respond to rewards today, not promises for future success. Likewise in the area of classroom control the teacher must be aware that the children respond differently from their middle-class counterparts. (159) The teacher should avoid the use of shame and guilt and should attempt to set clearly defined rules and limits that the children will understand.

Preparing Teachers for the Schools

The inner-city schools, which need dedicated and well-trained teachers, have the highest ratio of teacher turnovers and are largely staffed by young, inexperienced teachers. What is desperately needed here are teachers who volunteer to serve in these schools and who are specifically trained to work with the children. Kornberg (137) states "that the teachers professional growth is the key to the staff problem in the 'difficult' schools and must begin during his preservice years". In order to understand the cultures and what the implications of their economic and social class status hold for the learning process, prospective teachers need a broad background in anthropology, sociology, and psychology. They need early experience in the schools and communities and could also benefit from discussions with experienced teachers. Several colleges are now implementing internship programs to prepare teachers better for their professional work. Two of these colleges are Hunter College and Queens College. The program at Hunter College (136) stresses that prospective teachers should be specifically prepared in schools where they eventually will teach. It is a voluntary program and the student teacher would not have to stay in this school after graduation. The program hopes to challenge young people to enter such teaching posts voluntarily and to stay in these positions because they recognize their inherent rewards. A student teacher in this program would spend a greater number of actual hours teaching, have a wide contact with community agencies, be included in weekly conferences in the school between school and college personnel and the student teachers, and spend time observing administrative and service personnel in the school.

The program at Queens College (137) is called BRIDGE – Building Resources of Instruction for Disadvantaged Groups in Education. One phase of the program is a teaching and curriculum laboratory to study what is needed for children in the poverty-depressed urban areas. Another phase is BRIDGE groups in which college students work with small groups of disadvantaged students who come voluntarily for help with school problems. The goal of these groups is to develop meaningful relations between the student and the disadvantaged children.

These programs point out the need for both public schools and colleges to take a greater interest in teacher education. Cooperative programs should bring experienced teachers into the college classrooms to tell of their experiences and send college faculty members into the inner-city schools to observe conditions. Not only could the colleges play a better role in preparing teachers for the instruction of these children but they could also help in the development of new curriculum activities, teaching materials and methods which are appropriate for this population of children.

Measuring the Progress of Children

Introduction

In recent years, an increasing dissatisfaction with existing methods and procedures in measuring the growth of young children has emerged. The reason for this dissatisfaction stems from considerations of the following:

- The inappropriateness of existing measures such as intelligence tests in terms of their use with children from poverty-depressed areas
- The apparent need for measures which translate useful bodies of normative developmental information concerning the growth of children in the areas of perception, motor, cognitive, language, and socialization processes.

Testing Children in the Poverty-Depressed Areas

For children who come from lower socioeconomic levels, certain characteristics may be expected to affect test performance. The children are less verbal, less motivated toward school achievement, less competitive, less conforming to middle-class norms of behavior, more apt to be bilingual, less exposed to intellectually stimulating materials in the home, less varied in recreational outlets, and less knowledgeable about the world outside the immediate neighborhood. (246)

Considering these factors, if an obtained score on measures of intelligence is interpreted to mean that a child ranks or will rank no higher in learning ability than does his more affluent counterpart with a similar obtained score on the same test of intelligence, such an interpretation might well be erroneous. The fact that the children are not motivated, are unaccustomed to testing procedures, etc., influences the obtained score independently of whether a child has learned to do certain things recognized by the test.

Thus, the children are further handicapped in the sense that not only do they lack the experiences necessary to learn the abilities sampled by existing tests of intelligence but, in addition, their test-taking behavior is not as effective as that of the middle-class child because of a lack of competitiveness, lack of motivation, etc.

Existing measures of intelligence and other related tests of achievement, therefore, are uninterpretable for this population of children regardless of the function which they purport to serve.

Changing Concepts in Measuring the Progress of Children

In considering changes in the concept of intelligence in Section II, it was noted that qualitative as well as quantitative concepts of intelligence characterized present-day thinking on the subject. This implied that children's capabilities changed as a function of development and interaction with the environment. The evidence presented in earlier sections on the development of perception, cognition, motor, language, and socialization patterns of young children adds credence to this concept.

This leads to some very fundamental considerations in measuring the progress of children which departs from the traditional concepts of tests and measurements as they relate to the classroom. Here we are primarily interested in "clinical" observation in the development of the children in terms of observing the extent to which their behaviors reflect the normal patterns of development. In this sense the observations are entirely individualized and serve a diagnostic function for determining areas of normal development and areas in which the child clearly needs instruction. Such information is not available in measures like the tests of intelligence mentioned in the first section of this report, although such tests do sample many of the perceptual, cognitive, and language skills of the growing child.

They do not, however, specify whether the child's development characterizes what is considered to be normal growth in these skills.

If one examines language, for example, there appears to be a natural sequence of grammatical development and other related aspects which can be observed and "clinically" interpreted by the teacher. Perceptual and cognitive development is much less reflected by an observable indicator like speech. It must be inferred from various activities such as the child's ability to sort and categorize along the physical features of the objects. The important point, however, is whether the ability matches the normal pattern of acceptable development.

Clearly this type of observation is a form of testing but it relates directly to the progress of an individual child with respect to an external objective reference that is based upon stages of development which have been empirically defined. There is a need for translating existing bodies of normative developmental information concerning growth of such things as language and cognition into procedures of classroom observation and then to train the teacher in their use.

Need for New Testing Concepts

In summary, therefore, this type of "clinical" observation releases the teacher from interpreting standardized tests against a population of children for which the tests are inappropriate, to a clearer interpretation of development against an external reference consisting of normal qualitative changes in development. Its emphasis of serving a diagnostic function removes the notion of innate ability to learn in favor of one which emphasizes what kinds of experiences the child needs in order to acquire abilities that permit him to learn more efficiently and effectively.

XII. ORGANIZED PROGRAMS FOR PRESCHOOLERS

Head Start

Introduction

Head Start programs attempt to provide the nutritional, medical, and educational advantages that children of more affluent parents enjoy. Head Start was implemented in June of 1965, after being conceived as early as November of 1964. The programs are tailored to meet the local needs of a particular community. The teachers are given very intensive training prior to working directly with the children. The training, although varied, appears to give the teacher greater confidence and optimism. The teacher-pupil ratio was 1 to 13 and the adult-child ratio, 1 to 5. Thus, the opportunity for individualized instruction was excellent.

One of the more significant aspects of Head Start was the establishment of the Child Development Center. The concept of the Center was to allow for drawing together the resources of the community which can contribute to the child's total development. As such the skills of people in the professions of medicine, health, nutrition, and social sciences are brought together to provide a systems approach in attempting to correct many of the disabilities that occur normally as a result of deprived conditions in the home. In addition, the program has recognized the importance of neighborhood involvement and the need to include families directly, and adult volunteers in particular, to help with the education of the young child. One significant aspect of Head Start was the emphasis on parental involvement. Programs generally directed themselves toward involving the parents in the educational process of the program as well as the means of enlisting their involvement.

The goals of Head Start are not cognitive in nature and most, if not all of the programs do not employ any academic content, per se. The goals normally include general areas such as improving upon the health, confidence, self-respect, dignity, and peer relations of the child. One area that does receive some close attention is language. Programs usually attempt to improve the language skills of the child through varied social experiences.

Since the goals are so broad, the Head Start programs vary widely in their content and activity as well as in the specific objectives which they pursue. As such, the success claimed by various Child Development Centers is wide and varied.

One particular area of concern to some investigators is the lack of systematic evaluation designs to test the efficacy of any given program to reach its objectives. Many startling claims have been made, but tight experimental designs and carefully controlled longitudinal studies are conspicuous by their small number.

Impact of Head Start

One of the most extensive and exhaustive studies conducted in the area of Head Start was recently completed by the Westinghouse Learning Corporation and Ohio University. (206) In this study the issues and problems with Head Start were characterized and highlighted. The authors first begin their discussion with a description of the methodological problems associated with testing the treatment effects of special instruction.

Methodological Problems of Past Research. They point out that, in previous research on the effects of Head Start, none of the studies has been based upon the comparisons of the subsequent development of treatment and control groups randomly assigned to Head Start or non-Head Start status. Unfortunately, this shortcoming was also inherent in their study and acknowledged by them. Consequently, the authors immediately qualify their findings with the statement that unknowable biases may have been introduced into their research design and that interpretations are necessarily matters of judgment rather than fact.

Another problem with previous Head Start research has been the lack of comparability among separate and independent studies due to different enrollment criteria, program treatments, designs, instrumentation, and schedules of data gathering. There has also been an absence in many studies of any control or comparison groups at all. Many studies were guilty of comparing groups of different chronological age or different socioeconomic status. Some studies used too few cases – frequently only those enrolled at one particular Child Development Center, and finally, many contained geographical restrictions to a local or regional scope.

The authors next point out that lower educational status is usually associated with lower class social status and this connection is usually interpreted as the consequence of various deprivations and, thus, amenable to remediation through special treatment. They are not very clear on what they mean by "special treatment" or the nature of the nurture. They indicate, however, that there is confidence that such strategies exist, or may be developed, which will alter significantly what would otherwise become a downward course of development, learning and functioning. This confidence appears based upon some careful experimentation that has shown that some, at least temporary, arresting of learning disabilities is feasible. (95, 432)

In the few studies that have used experimental and control groups in the evaluation of Head Start versus non-Head Start differences, these two groups have not, unfortunately, been truly equivalent in that participants have been necessarily either self-selected or they have responded differently to enrollment efforts by Head Start personnel. It has been found that matching groups on one or several criteria still leaves inequalities on other factors for children and/or parents. Such research is essentially quasiexperimental since participants and nonparticipants are essentially different. (272, 305) The authors' appreciation of this problem led to the decision to match Head Start and non-Head Start subjects on as many relevant variables as possible, and to employ covariance analysis and other statistical means to equate for socioeconomic differences.

The authors next look at the effects of Head Start within the program itself (pre- and posttesting) and the effects of Head Start on the subsequent development of children. They point out that the great weight of evidence is that some upward displacement of test scores transpires throughout the period of the Head Start program. However, they qualify this by saying that all studies have not found favorable differences in all cases and that observed differences have not always been significant statistically. It should be noted that many objectives of Head Start probably cannot be measured with any precision particularly in the affective domain of values, appreciation, etc. It should also be noted, however, that little if any attempt was made to get some index of change in these areas. Another problem consonant with the lack of specific measures was the lack of explicit sets of objectives or intended results of instruction.

General Findings of Past Research. Concerning subsequent effects of Head Start, research has been largely limited to measures taken in kindergarten and first grade only, with very few of the latter. A common finding is the disappearance of differences established earlier, which has been interpreted as the result of a number of factors as follows:

- An initial schooling effect, in which nonparticipants rapidly realize the developments which participating children reached earlier during the Head Start program
- Consequence of teachers' preferential treatment of non-Head Start children
- Peer-group influence (non-Head Start emulate Head Start classmates)
- The "turning off" of Head Start children in the restrictive setting of impoverished schools
- Fluctuations in learning rates.

In some miscellaneous findings and observations the authors found that in almost all studies using a third middle-class comparison group, Head Start and non-Head Start subjects never reached the educational level of the middle-class group. Finally, some miscellaneous factors considered in scattered Head Start research were teacher characteristics, effect upon children's adjustment, sex differences and ethnic characteristics, parental satisfactions with Head Start, and speculations of "later bloom" based upon latent benefits.

In summary, the authors point out that first, no great impact by Head Start has been clearly demonstrated. Where the research has shown differences they have been quite modest. Second, Head Start graduates have not reached a status comparable to that of their middle-class counterparts.

The Westinghouse Learning Corporation and The Ohio University Study

The Design. The objective of the research was to determine whether children who had Head Start experiences did better in the first 3 years of school than children who did not have this experience. Samples of children were studied from each of the first three grades in school. The success of the research objective depended upon the degree to which the Head Start and control groups were equivalent on all relevant variables. The authors attempted to make these groups equivalent by carefully defining the Head Start (HS) and Control (C) subpopulations in order to make them comparable on certain key variables. Subjects had to live in a target area from the time of their Head Start experience (or lack of) to the time of the study. This helped guarantee similar community and school environments. Both groups had to meet the eligibility requirements for Head Start. They had to attend the same school system, approximating a comparability of education experience subsequent to HS. (The authors felt it impossible to obtain identical classroom experience for both groups.) Finally, any attendants of other HS or similar programs were excluded from the control group.

Although this controlled definition of HS and C subpopulations was seen as helpful in matching the groups on some relevant variables, the authors felt that further attempts to achieve comparability should be made with regard to the samples drawn from the subpopulations. That is, the authors did not feel that simple random sampling from the two subpopulations would achieve comparability on certain key variables. Consequently, samples for the C groups were drawn so that they matched as well as possible the HS samples on sex, racial- ethnic-group membership, and kindergarten experience.

They were not able to employ the same strategy with socioeconomic status because school records did not provide precise enough information, and because they felt that the HS experience of the children might affect the socioeconomic status of the child's family. Thus matching on this variable might remove part of the HS effect. Consequently, they controlled socioeconomic effects through the use of the analysis of covariance with SES as the covariate.*

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*This rationale appears quite strange since using socioeconomic status as a covariate will also wash out HS effects if the two are related in the way stated above. The authors later point out that this is probably not the case, but their argument, based upon a migration study, appears quite weak. The important point to note here is that socioeconomic status should have been measured before the HS experience instead of after.

Measures of Achievement. Three measuring instruments were employed to measure the effects of Head Start on school achievement in the cognitive domain as follows: Illinois Test of Psycholinguistic Abilities, Metropolitan Readiness Test, and Stanford Achievement Tests.

Three instruments were employed to measure achievement in the affective domain as follows: Children's Self-Concept Index, Classroom Behavior Inventory, and Children's Attitudinal Range Indicator.

In order to measure the long-term effects of Head Start from the first grade to the third grade, the tests were given to children from all three grades in both HS and C groups in the following manner:

- Illinois Test of Psycholinguistic Abilities – all three grades
- Metropolitan Readiness Test – first grade
- Stanford Achievement Test-I – second grade
- Stanford Achievement Test-II – third grade
- Children's Self-Concept Index – all three grades
- Classroom Behavior Inventory – all three grades
- Children's Attitudinal Range Indicator – all three grades.

Hypothesized differences in achievement between HS and C groups were tested by employing an analysis of covariance with one fixed experimental variable (HS versus C) and one random replications variable (104 Head Start Centers). The covariate was a socioeconomic index based upon occupation and education of the head of households taken from the Parent Interview Questionnaire. The analyses were performed for both summer and full-year programs separately and also for breakdowns into smaller subgroups based upon geographic area, size of city, and racial/ethnic composition of the Center. No analyses were carried out where there were fewer than six centers (replicates).

Results. As mentioned earlier, the data were considered separately for summer and full-year programs. Only the results based upon total scores for the three measures are considered in the following summary, although identical analyses were performed on the subscores of each measure. Accordingly, the results are as follows:

- Summer programs appear to be relatively ineffective in producing any persisting gains in cognitive and affective development that can be detected by the tests used to measure achievement in grades one, two, or three.
- Full-year programs appear to be marginally effective in producing gains in cognitive development that can be detected in grades one, two, or three when viewed in the overall analysis. The most significant gain, however, was in the ability to adjust to the school culture. Full-year programs appear to be ineffective in regard to affective development as measured in the study.
- HS children, whether from summer or full-year programs, still appear to be in a disadvantageous position with respect to national norms for the standardized tests of language development and scholastic achievement.
- HS appears to have had a positive effect on the parents of its enrollees: They voiced a strong approval of the program and its influence on their child.

The results of the study made by the Westinghouse Learning Corporation and The Ohio University are certainly disappointing. It is significant to note, however, that the study did find the 1-year programs probably more effective in the sense that some gain in HS persisted through grades 1 to 3. More significant, however, was the fact that the children showed a substantial gain in the area of adapting to a completely different culture such as the school. The fact that HS tends to acclimate children from less affluent homes to the school setting is notable. Also encouraging was the favorable impact the program had on parents.

The Importance of Well-Organized Educational Experiences

What can the maximal effects be when a program for the children is thoroughly conceptualized in terms of what we know to be relevant in the development of young children? A study of Van de Riet, et al. (401), suggests that the initial gains can be substantial and persist dramatically through the first grade if the training program is derived from a consideration of what is now known concerning the development of the child's sensory-motor, cognitive, language, and socialization skills. The Van de Riet project incorporated this knowledge. In the study, a group of 24 children from lower socioeconomic homes was brought into a sequential program of planned and guided learning experiences. A matched control group was exposed to a traditional program, and a second matched control group received no preschool program.

The program departed from traditional preschool programs which emphasized emotional-social development and readiness skills. The curriculum was designed on the basis of developmental tasks, which emphasized manipulating, organizing, and classifying things, that led to internalized thought and effective verbal expression. More importantly, however, was the decision process leading to a selection of what kinds of tasks should be provided. To do this the authors turned to the research that points out that a child goes through stages of development and that at each stage he has characteristic ways of organizing and assimilating information from the environment.

The content of their program became a carefully planned sequence of experiences that followed what research has revealed concerning the course of perceptual-cognitive development of young children. The sequence also was made to meet another requirement: each part was to have some continuity with the learning that was to follow. The program was organized on the assumption that the sequence proceeds from motor, to perceptual, to symbolic aspects of cognitive functioning. The curriculum progressed through a planned sequence of tasks designed to move the child from a stage of dependency on manipulation of concrete objects to the point where he can internalize and manipulate without the presence of concrete materials.

In his study Van de Riet (401) provides a description of the type of activities used in the program. He states

> Near the beginning of the sequence in exploring numbers and space is a series of activities designed to teach spatial concepts. To teach the concepts of longer, shorter, closer, further, etc., a small chair is placed about three feet from a wall and a large chair about five feet beyond the small one. The child walks to the small chair and then to the large one; he must express whether it took him longer to walk from the wall to the small chair or from the small chair to the large one. When he can make this discrimination, he repeats this sequence blindfolded (without visual cues). After he learns the meaning of longer, new terms (e.g., shorter, closer and further) are introduced and repeated in a game using a plastic board with six "roads" of varying lengths. The "roads" are indentations on the board along which the child can run his finger or a toy car. At first he is asked to discriminate between two roads which differ considerably in length. Finer discriminations are made in successive turns. Then he is asked to discriminate differences in the lengths of more than two roads. Finally he learns to discriminate using only visual or only kinesthetic cues. More abstract games of space and numbers which require the concepts and discriminating abilities learned in these early games follow.

The instruments used to measure the effects of this type of training on developmental characteristics are presented in Table 3.

The dramatic results of this planned program underscore the importance of what can be done with children deprived of conditions known to be related to early developmental characterization of a sensory-motor-perceptual-cognitive nature (if the programs themselves are based on a knowledge of what these characteristics are and some of the conditions which lead to their development). The posttest after the first year revealed large differences on all developmental measures which would have occurred on the basis of chance only 1 in 1000. Further, the results persisted to the end of the first grade. More important, as far as the thesis of our report is concerned, was the obtained difference of I.Q. points between the experimental and control groups. This difference was reported to be as large as 21 points as measured by the Binet test at the end of the preschool program. This difference persisted at the end of the first grade, also.

TABLE 3. DEVELOPMENTAL MEASURES

Characteristics	Instruments
Perceptual-motor skills	Bender Motor Gestalt Test (Koppitz, 1964)
Gross motor coordination	Rail Walking Test (Kephart, 1960)
Spatial abilities	Seguin Form Board – Arthur Revision (Arthur, 1947)
Concept formation	The Illinois Test of Psycholinguistic Abilities (McCarthy & Kirk, 1961) Visual-motor association subtest
Vocabulary development	Vocabulary subtests of the Stanford-Binet
Language comprehension	The Illinois Test of Psycholinguistic Abilities (McCarthy & Kirk, 1961) Visual decoding subtest
Verbal reasoning ability	The Illinois Test of Psycholinguistic Abilities (McCarthy & Kirk, 1961) Auditory-vocal association subtest
Idea-expressing ability	The Illinois Test of Psycholinguistic Abilities (McCarthy & Kirk, 1961) Vocal encoding subtest
General intelligence	Stanford-Binet Intelligence Scale, Form LM (Terman & Merrill, 1960) Human Figure Drawing (Harris, 1963) Peabody Picture Vocabulary Test (Dunn, 1959)
School-readiness skills	Metropolitan Readiness Test (Hildreth, Griffiths, & McGauvran, 1964) School Readiness Screening Test (Sprigle, 1966)

Kindergarten

The purpose of this part is to present a review of the literature concerning the overall effectiveness of kindergarten as a significant contributor to school success. The intent of the review was to examine what research had been done which compared the educational achievements of children who had attended public-school kindergarten programs versus children who had not.

Fifty-six articles were selected for review covering a period from 1920 to the present. The articles were distributed in two categories: Experimental Evidence and Professional Consensus.

Experimental Evidence

Twenty-two of the articles selected illustrated research in which the investigators provided objective quantifiable measures of student achievement in one or more specified content areas to support their interpretations of kindergarten effectiveness. Of the 22, 17 were longitudinal studies in which a control group was provided. The remaining 5 studies used pre- and posttest measures of achievement to interpret the effectiveness of a given instructional kindergarten program in bringing about desired student changes. No control group was provided for these studies.

Professional Consensus

The remaining 28 articles concerned professional expert opinions of educators who had an intimate knowledge of the philosophy and practices of kindergarten programs.

The breakdown of subject areas and the number of articles in each are presented in Table 4.

Findings

Reading. Professional consensus held that meaningful educational experiences and play materials could be introduced informally into the kindergarten situation and would result in positive benefits in reading achievement during the early formal school years. (11, 75, 122, 377, 418) The research findings also generally support this position. Children with kindergarten experience obtained significantly higher scores on all reading tests than children without such training. (123, 148, 158, 233, 277, 396) However, it was also found that when testing procedures were carefully used with long-range rather than short-range interpretations made, the initial advantages soon dropped out. (153, 367) On the other hand, it was found that the kindergarten child could benefit from reading experiences and sustain initial gains if stepped up instruction followed in the later grades. (48, 235)

TABLE 4. CONTENT AREAS OF RESEARCH ON KIND AND NUMBER OF ARTICLES

Subject Area	Experimental Findings	Professional Consensus	Total
Reading	10	5	15
Language	3	1	4
Mathematics	6	--	6
Intelligence	3	2	5
Socialization – Personal Adjustment	7	12	19
Socialization – Instructional	--	8	8
Total	29(a)	28	56

(a) The reason for the discrepancy of this total and the total number of articles concerning experimental findings is that several of the articles overlap in terms of the content areas considered in the respective studies.

Language. Here the findings were inconsistent. In articulation, word meaning, verbal facility, and comprehension of language, several investigators found no significant differences from those of children with no training. (21, 298) One rather comprehensive study, however, found a gain which favored the children with kindergarten. (277) Concerning professional consensus, however, the opinion was widely held that educational experiences at this level in the language arts – speaking, listening and writing – could be effectively introduced. (400)

Mathematics. Concerning arithmetic, the findings suggest that kindergarten children surpass nonkindergarten children more in the area of arithmetic reasoning than in the manipulation of numbers. However, there was a marked difference in working with numbers also. (21, 124, 153, 176, 277, 396)

Intelligence. As with language, surprisingly little experimental evidence had been accumulated concerning the development of intellectual capabilities. The studies which were conducted however, showed significantly higher scores on intelligence measures for the kindergarten children than those without the training. (35, 277, 330) This was also in line with the professional consensus that the performance of children on tests of intelligence could be increased through kindergarten. (141, 427)

Socialization – Personal Adjustment. A great majority of the articles concerning professional consensus pointed to the advantages of kindergarten in the development of the child's socialization patterns. The articles, however, differed concerning their emphasis on the amount of readiness experiences which should be introduced to promote the development of the child's reading, language arts, and mathematical skills in addition to his socialization patterns.

The areas in which they found agreement, however, were extensive. They firmly agreed that one of the primary purposes of kindergarten is to help the child adjust to a new authority figure, get along with other children, and generally adapt to new and different experiences. In kindergarten the child must learn to establish ways in which he can initiate and sustain satisfying relationships with other children. He must adjust to a new adult, his teacher, whose ways may differ significantly from those of his parents. He must successfully accomplish many new and different kinds of experiences. His success at mastering these challenges was thought to be significant in affecting his attitude toward the school environment, the teacher, other children, and himself. There was a clear consensus among many of the educators that, above all else, the socialization of children in the kindergarten had been realized. (56, 185, 189, 190, 205, 240, 245, 393, 416, 428, 431, 389)

In addition, the research findings clearly demonstrated that children could learn to develop good patterns of socialization early in life and that teachers perceived this difference of adjustment to be significant to progress in the first grade. (178, 367) The findings suggest rather strongly that these kinds of kindergarten experiences made a significantly great contribution to the social adjustment of first-grade children. (227, 277, 286, 348, 396)

Socialization – Instructional. The emphasis in the socialization and personal adjustment described in the previous topic has been challenged, not in terms of its importance, but in terms of its emphasis. Some educators saw the feasibility for having the child master experiences related to successful achievement of first-grade-content material. They also concurred that learning must still maintain a relaxed atmosphere of fun, but attempts should be made to provide the child with experiences helpful in dealing effectively and efficiently with the learning tasks of the first grade. Unfortunately, little experimental evidence concerning the type and nature of readiness experiences for kindergarten children was available to add credence to the educators' views. Hence, none of the professional consensus articles delineated with any clear confidence what readiness experiences might be helpful and how they should be introduced. They did, however, make a very strong case for utilizing the kindergarten experience as an opportunity to help the child ready himself for a variety of specific first-grade tasks. (14, 47, 63, 144, 248, 266, 417, 402)

Summary, Conclusions, and Implications

- Much of the research which compares achievement of first grade children who attended kindergarten and those who did not, clearly favors those with kindergarten experience. No research evidence was found which offered a counter-indication. The surprising finding, however, was the limited number of longitudinal studies conducted to determine the extent of the impact of kindergarten experience in terms of later formal-school achievement. The studies which were conducted, however, were favorable.

- There appears to be some evidence, particularly in the area of reading, that the initial benefits of kindergarten may be removed unless some relevant follow-through activities occur during the early formal-school years.

- The disappointing results found in the area of language development are understandable in terms of the great emphasis placed in the development of socialization skills. The children are understandably reinforcing one another's speech patterns. This suggests that more should be done to provide interaction with an adequate language model and grammatical training to offset this natural occurrence.

- Concerning socialization, the general consensus among teachers and other sources of research evidences was that children with kindergarten were more mature in their relations with other children, their attitudes toward the school, and their participation in work activities, etc. The apparent and far-reaching advantage here is that the first-grade teacher can proceed along a rational schedule for student learning without having to tend extensively to the problems of personal and social adjustment of his children. This advantage to the first-grade teacher can be realized, however, only if all the children have had the experience of kindergarten.

- There was a surprising lack of research dealing with the development of sets of educational practices linked to achievement in specific content areas in the first grade, and with ways by which they can be effectively introduced to an informal setting such as kindergarten. The reason for this apparent dearth of research appears to be the result of a resistance among educators to the introduction of planned educational experiences at the kindergarten level. There appears to be a strong adherence to the philosophy of providing for the development of socialization skills. This attitude may unnecessarily retard the discovery of the kinds of experiences the kindergarten child should be exposed to in order that his potential for later learning be fully realized.

- Kindergarten advocates tend to play down the importance of conducting follow-up studies to accumulate evidence concerning the scholastic achievement of these children during the early formal school years. Educators appear to rely on their persuasive-argumentative powers to stay off the critics of kindergarten and to promote its worthiness. There is a movement in this country, however, that clearly emphasizes the dramatic importance of early training in all areas of the childrens' skills and capabilities. Educators will soon be called upon to show more substantial proof that the kindergarten child is receiving the maximal benefits to which he is entitled.

Nursey School and Day Nurseries

Introduction

Definition. Day nurseries' main concern is to substitute for maternal care and meet preschool children's basic needs while their parents are working, and they operate for most of the day. Children who attend come from families of lower than average socioeconomic level. Nursery schools on the other hand generally attempt to provide preschoolers an educational experience supplementary to home experiences, and they are open for a shorter period of time. In the past, children attending the nursery schools have been drawn mostly from homes of above-average socioeconomic level.

Historical Origins. Day nurseries in this country were first begun by welfare workers over 100 years ago. They were given impetus during the war years, when manpower shortage and need for national defense drew women into industry.

America's first nursery schools were begun in the 1920's by colleges and universities doing research on development, education, and methods of child care, and they focused on teaching habits and promoting health. Many nursery schools were begun under the W.P.A. programs in order to provide jobs for unemployed teachers.

Trends. Recently the old distinctions between nursery schools and day care centers have become more obscured. As more professional women begin to work, an increasing number of upper middle-class children are attending day care programs, and enrichment programs being offered to children from poverty-depressed homes have brought about a larger increase in nursery schools. As the importance of the preschool years is realized, both programs are drawing from the same developmental principles in an effort to provide an environment suited to the development of the child's perceptual-cognitive, language, and social skills.

Interest in preschool programs has risen lately due to several factors: increasing emphasis on social adjustment, attainment of intellectual potential and success in school, and a rise in employment of women. Forty percent of all mothers with children under 18 years old have jobs, partly because women now have better opportunities to work and partly because of the 33 percent jump in the rate of divorce and illegitimate birth between 1960 and 1967. More than 200,000 children in Ohio would probably use day care if it were available, but certified programs can handle only 11,200. (439)

Advantages of Attending Nursery School

Intellectual. Several researchers at the Iowa Child Welfare Research Station during the 1930's through the 1940's reported I.Q. gains among children attending nursery school (356), but investigators at other institutions (225, 8, 27, 293, 217, 242, 164) have failed to duplicate these results. Olson and Hughes (293) found that among privileged children those who were in nursery school showed no greater intellectual growth than those who were not. Walsh (409) found that children attending nursery school exhibited more curiosity about their environment than those who did not, and one would expect this kind of curiosity to stimulate intellectual development. However, generally the results of research in this area have appeared contradictory and inconclusive.

Language Development. Smith (366) found that children used longer sentences and more advanced language patterns when conversing with adults than with children, and McCarthy (265) suggested that, for children from higher socioeconomic levels, nursery school probably raised the proportion of their contacts that are with children rather than adults and might even hinder language development. However, a highly planned training program by Dawe (89) was successful in causing language and conceptual growth among orphanage children who otherwise had little contact with adults.

Physical Development and Motor Skills. The hope that providing children space, equipment, health routines, and stimulation by peers would improve health and physical ability was unsubstantiated except for those special skills whose development through practice was available only in the nursery program. (225, 242, 355)

Social Development. Walsh (409) found children attending nursery school gained more than those who did not in initiative, independence, self-assertion, self-reliance, curiosity, and interest in the environment. Kawin and Hoefer's (225) study indicated nursery school attenders eliminated more infantile and dependent habits than matched nonattenders. Jersild and Fite's (213) study showed those who had been in nursery school longer were more sociable in the beginning, but by the end of the year the new children had caught up with them. Resistance to others demands was more closely related to length of time in nursery school than to chronological age, according to Caille. (53) Ezekiel (146) and Vitz (403) studied children in nursery schools over a period of time and found, respectively, timid children becoming more aggressive, and antisocial aggression becoming less common, but these studies were done without controls. Other studies done without controls showed more outgoing behavior, more successful use of social techniques, and greater maturity and independence developing during nursery school attendance. (261, 9, 200, 214)

Some researchers have followed the children as they entered elementary school and attempted to determine what effect nursery school had on these later experiences. Van Alstyne and Hattwick (399) felt that children who had attended nursery school tended to show slightly more leadership in the early grades although the evidence was not strong. A study by Bonney and Nicholson (34) found that sociometric scores in the early grades were significantly higher for those who had attended nursery school than for those who had not. Allen and Masling (4) found nursery school children received the higher mean in 14 of 15 comparisons, although the difference between the groups was significant only in second grade and not in kindergarten or first grade. Here classmates saw former nursery-school attenders as more prestigeful, spontaneous, and intelligent. Studies by Walsh and Cushing (81) showed similar results. However, two other studies by Bonney and Nicholson (34) and another by Brown and Hunt (41) found no significant difference. Results are not definite, but there is evidence which suggests that nursery school helps to develop social skills, and in some cases these effects last several years.

Emotional Adjustment. There has been concern that the separating of children from parents for periods as long as those involved in day nurseries might harm them emotionally. Glass (157) studied this issue and discovered no evidence that such children had more problems than those who stayed at home, except problems related to situations at home which had already existed. Heinicke (191) compared the behavior of newly institutionalized children to that of children beginning day care and found that although both groups showed some disturbance the first few days, the day-nursery children were soon able to make a quite satisfactory adjustment and respond normally to their parents, while the institutionalized group continued to show massive physical, emotional, and behavioral disturbances. Apparently, shorter but regular contacts with parents was sufficient to maintain the necessary relationship.

Priority

Nursery school varies in its educational benefits depending on the organization of the program, the training of the staff, and the population of children being served. It is safe to conclude, however, that all children can benefit from well-organized educational programs, particularly when the school provides opportunities for growth which are not experienced at home. (320, 179)

It is reasonable to expect, however, that children from less-advantaged homes have more to gain from such programs. This assumption has been substantiated consistently when the programs for these children derived their substance from a careful consideration of what is known about the course of development of young children. (234, 264) This statement should not be construed, however, to imply that children from more advantaged homes do not also gain. The matter is simply one of degree.

The major issue, however, is to assure that all of Ohio's children receive the experience for developing fully their sensory-motor, cognitive, language, and social skills. One must out of a consideration of funds, staff, and facilities, however, determine priorities and the research would seem to suggest that a very prudent beginning in the development of organized educational programs for preschoolers would be with the children from the poverty-depressed areas of the state. As time, money, and staff become available, the preschool programs should be extended to include all of Ohio's children.

Nurseries as Deprived Environments

Care must be exercised to prevent day nurseries from becoming another poor environment as harmful as a deprived home. A poor program can hinder the child's later performance in school, as well as his social and emotional development. Some of the poorer day nurseries in Ohio, when not an outright threat to the children's health and safety, use extreme and restrictive punishment such as slapping them in the face for talking, crying, wetting pants, or leaving chair, or locking them in a closet. Many are overcrowded or lack equipment. At one, 88 children were under the supervision of two adults. Such circumstances certainly do not benefit children, and may well cause them additional harm. (439)

The areas in which contradictory results were found for the nursery schools and/or day care programs are a function of the problems of matching programs and then examining their effects on separate random samples of children. As in kindergarten and Head Start, school-readiness factors which include socialization skills appear dominant. This is not surprising since all three emphasize this aspect of development as a criterion for success.

Summary

It appears clear, however, from a consideration of these three organized programs for the preschooler that significant results can be made in the child's development, if the programs are rationally conceived on the basis of what we know to be the developmental pattern of young children. Van de Riet, et al. (401), supported this contention quite nicely. One significant result of all the studies indicates the importance of duration of the educational training, particularly, from preschoolers coming from homes with deprived conditions. Another important inference was made concerning the concept of day care centers. The notion must never be lost that any experience for the growing child at this age level is an educational one. All organized programs or institutions caring for children of this age must have well-constructed programs not only to assure the healthy development of the children but also to reduce significantly the probability of deprivating conditions. We have seen the effects these conditions have on the development of learning disabilities and the resulting cumulative-deficit phenomenon which shows up in later patterns of school achievement

XIII. PRIORITIES IN THE EDUCATION OF PRESCHOOLERS

Introduction

The purpose of this section is to assign priorities in the establishment of organized preschool programs for Ohio's young children. Clearly the population of children who hold the greatest promise for improvement in terms of educability and training are those who have not had sufficient opportunities for the development of skills known to be highly related to academic achievement during the early years of formal school. The report has emphasized the kinds of disabilities these children may develop and how these sets of learned behaviors affect dramatically the course of school achievement, resulting, more often than not in total withdrawal from the educational process. Thus, there is an educational opportunity to arrest the learning disabilities of these children through early intervention programs beginning at age three. This is clearly in Ohio's interest as it permits the full educational development of a very valuable resource, its young children.

The evidence presented throughout the report clearly implies that the more deprived the environmental conditions in which a child finds himself, the greater the impact of a sound program of preschool education.

First Priority

Accordingly, Ohio's top priority in the area of early education should be the establishment of a policy to assure that children concentrated in the poverty-depressed areas of the state receive the opportunities to participate in the type of quality preschool education programs that the state of the art, as evidenced in this report, clearly permits Ohio educators to develop.

Number of Children

Sufficient information is available to identify numbers of children to whom this policy should be directed and in what regions of the state they are located.

About 17 percent of Ohio's children aged 3 to 5 years are living in families with incomes below $3,000, a level of income identified as essential to maintain minimally accepted standards of living for an average-sized family. (440) This represents a total of over 100,000 children. (See Table A-1 in Appendix A).

It is estimated that, during the past 8 years, the number of children living in low-income families has been almost halved, resulting from an auspicious combination of economic and demographic factors. The economic factors include the prolonged period of sustained economic growth experienced by both Ohio and the rest of the nation This is manifest in a general increase in per-capita income and a dramatic reduction of the proportion of families with low incomes. Thus, for the United States as a whole, 19 percent or almost one out of five families had incomes of less than $3,000 in 1960 (1967 constant dollars); by 1967, this figure had declined to 12.5 percent. (441) Data on employment and earnings suggest that Ohio has participated fully in this period of economic expansion. (442)

The demographic factors bearing on the reduction in the number of children living in poverty in the state are the sustained decrease in the number of births since 1960, experienced by Ohio and many other states (443), as well as the sharp reduction in migration to the state since 1960 (444). Both of these factors have tended to reduce sharply aggregate population growth in the state, but more particularly they have resulted in absolute declines in the size of some age groups.

Table 5 shows, for example, that children aged 3 to 5 years numbered about 670,000 in 1960; by 1968, it is estimated that this group numbered about 590,000 and it will stabilize at this level through 1975. On the pessimistic assumption that the rate of reduction in poverty-level families will be zero during 1968-1975, the projections

TABLE 5. ESTIMATED NUMBER CHILDREN AGED 3, 4, AND 5 YEARS BY POVERTY STATUS FOR OHIO, 1960, 1968, 1970, AND 1975

Age	1960	1968(b)	1970(c)	1975(c)
		All Children		
Total	671,463(a)	591,792	570,575	586,903
3 years	226,679(a)	188,650	185,204	200,918
4 years	223,455(a)	201,070	190,444	195,541
5 years	221,329(a)	202,072	194,927	190,444
		Children in Poor Families		
Total	111,341(b)	57,804	57,056	58,690
3 years	37,587(b)	18,328	18,520	20,092
4 years	37,053(b)	19,652	19,044	19,554
5 years	36,701(b)	19,824	19,492	19,044

(a) Census of Population, 1960, "Ohio", U.S. Bureau of the Census.

(b) Estimates prepared by Battelle Memorial Institute, Columbus Laboratories.

(c) Projection prepared by Battelle Memorial Institute, Columbus Laboratories. For a discussion of the estimation and projection methodology, see Appendix B.

indicate that about 58,000 children in Ohio will be living in families with less than $3,000 income through 1975. If, on the other hand, increases in per-capita income continue at rates exhibited during 1960-1968, the number of these children will decrease from 57,000 in 1968 to about 40,000 in 1975.

Table A-1, shown in Appendix A, shows the estimated distribution of preschool age children (3 to 5 years) currently living in low-income families. This is depicted graphically in Figures A-1 and A-2. Figure A-1 which shows the distribution of the number of indigent children, indicates, not surprisingly, concentrations of this group in the large metropolitan areas of the state, i.e., Dayton, Columbus, Cleveland, Cincinnati, and Toledo. In the central counties of these areas about 5,000 to 6,000 preschoolers are in families of very low incomes. Figure A-2 shows the relative number of these children in each county, that is, poor children taken as a proportion of all young children. Concentrations are in the economically distressed parts of Ohio, notably in the Southeast (characterized as Ohio Appalachia) and other rural and semirural areas.

Estimates and projections of the number of young children living in low-income families for Ohio counties were developed by applying standard demographic techniques to publicly available information on births, migration, and family income. The estimates and projections are subject to the limitations imposed by the quality of the primary data and by the validity of assumptions regarding the persistence of observed demographic and economic trends. A description of the technical procedures employed may be found in Appendix B.

Second Priority

Kindergarten

Introduction. Sufficient evidence has also been presented which suggests that children who attend kindergarten do better in terms of school achievement in the first grade than those who do not attend kindergarten. Accompanying this statement of confidence in the young child's potential to benefit from formal education at age five is the fact that throughout the United States there are only six states which do not have either permissive or compulsory kindergarten statutes.

National Trends in Kindergarten. A survey was conducted among the fifty states, the District of Columbia, and five territories, including the Canal Zone, Guam, Puerto Rico, the Virgin Islands, and Samoa. In the survey, the following questions were asked:

- Do you have compulsory kindergarten statutes for the State?
- Do you have permissive kindergarten statutes for the State?
- Do you have compulsory kindergarten statutes, but optional attendance?
- Do the school districts receive state aid for kindergarten?
- Do you have bills pending regarding compulsory kindergarten statutes?
- Do you have bills pending regarding compulsory kindergarten, but optional attendance?

Table C-1, shown in Appendix C, shows the results. The survey revealed somewhat of a surprise in that there were no states with compulsory kindergarten and compulsory attendance. Seven have statutes for compulsory kindergarten and optional attendance. (This means that each school district is required to provide public kindergarten.) These seven were: Colorado, Connecticut, Florida, Illinois, Massachusetts, Rhode Island, and the Canal Zone.

Forty-three states or territories have permissive kindergarten statutes. These have legislation allowing the school districts to provide public kindergarten. Thirty-seven provide state aid to the school districts for kindergarten. Eighteen do not provide any financial aid. Six with neither compulsory or permissive statutes regarding public kindergarten are Alabama, Idaho, New Mexico, Samoa, Puerto Rico, and Guam.

In regard to impending legislation, Georgia, Maine, and Ohio are requesting compulsory offering of kindergarten; Alabama and Guam are requesting permissive legislation to enable the school districts to offer public kindergarten; Iowa is requesting permissive legislation for preschool for 4 and 5-year olds – they presently have permissive legislation for kindergarten; North Carolina and Texas are requesting state aid for public kindergarten.

Minnesota had legislation for compulsory kindergarten that died in committee; Montana's legislation for state aid failed the last session; Idaho's legislation for permissive kindergarten has failed the last three sessions.

States having kindergartens and public preschool programs (or pending legislation for preschool) are Washington, D. C., Wisconsin, Iowa, and New Jersey.

The growing interest and realization of the importance of early-childhood education was shown during the process of this survey. This was reflected by the amount of literature sent to us as well as verbal and written comments.

The survey reflects that kindergarten on a nationwide basis is now thought to be an integral part of the formal-educational system. In view of the evidence concerning the efficacy of kindergarten and the widespread acceptance of it throughout the United States, the next priority is to establish a policy which assures that all 5-year-old children in the state of Ohio share the opportunity and the right to attend formal educational programs at the kindergarten level.

Third Priority

Prekindergarten

The evidence provided throughout the report and the research conducted with nursery and day-care centers suggests also that children from middle- to upper-class homes can benefit from organized programs of preschool education. The need for prekindergarten among those homes is not as great since there is a high probability that many of the experiences which a child needs for the normal development of perceptual-cognitive and self-concept behaviors already exists in these homes. There is no guarantee, however, that some significant deprivating conditions might occur as a result of changing conditions in the physical and psychological environment of these children's homes. For example, the sophistication of the home's automatic machines and devices and children's toys are reducing the opportunities for the practical manipulation of objects and things which is critical to the development of perceptual processes in general, and visual discrimination, in particular. Another factor is the reduction in the number of parks, play areas, etc., which is beginning to characterize even the suburban areas. In addition there are trends that more mothers are better educated and are seeking careers along with raising a family. Evidence also suggests that even without advanced educational skills the tendency for both parents to work is increasing.

All of these trends suggest a slow emergence in the development of deprivating conditions of some significance to the child's development. Accordingly, it would be prudent for Ohio to establish a policy which permits the availability of prekindergarten programs to be offered. The policy should characterize considerations that encourage the development of programs at this level in much the same way as kindergarten was permitted to emerge in Ohio. This investigator does not see the necessity for a policy decision concerning immediate implementation since the emergence of deprivating conditions in the homes of most of our young children is only beginning to develop. Accordingly, this priority is the lowest of the three presented in the section. Ohio, however, should advance its policy to accommodate the possibilities of a future need for organized prekindergarten programs for all of its children.

Projecting Supply and Demand (Preschool)

Availability of Teacher Manpower

The delineation of priorities and subsequent policies concerning preschool education cannot be made independently of the considerations involving the availability of teacher manpower in the State of Ohio. The necessity for such a discussion comes from the need to know to what extent Ohio can match the suggested priorities with projections of available teacher manpower. There is a high probability that teachers with primary certificates (K-3), primary certificates (1-3) and those with elementary certificates (1-8) will be called upon to teach prekindergarten or the kindergarten programs according to the Elementary and Secondary Standards Division of the Ohio Department of Education. This is the procedure that is normally pursued. However, the supply cannot be determined and for many reasons. The exact number of presently employed teachers with either primary certificates and/or elementary certificates is not known and projections of available manpower cannot be made. Projection into the future also requires other information which is not available. First of all, one must assume an operative pupil-teacher ratio. In Ohio, there is no agreed upon pupil-teacher ratio for kindergarten. Since there are no formal, prekindergarten programs, there is, of course, no pupil-teacher ratio available here.

There is a need for overcoming these kinds of problems concerning the projection of supply and demand of teacher manpower in preschool education.

XIV. PRESCHOOL EDUCATION

Ohio Day Care Legislation

The legislation added a separate section 5104 to the Revised Code, legislating regulations specifically for day care centers and removing them from the domain of previous rules for "institutions" and "associations" caring for children. It changed the definition of the latter to simply one of several kinds of organized groups caring for and receiving children for two or more consecutive weeks, removing the condition "for periods of four or more hours per day", and put them under the auspices of the Department of Public Welfare.

Definitions

Child day care is defined, in Substitute Senate Bill No. 105*, as "administering to the needs of infants, preschool children, and school-aged children outside of school hours by persons other than their parents for any part of the twenty-four hour day, for part or all of at least two consecutive weeks, but does not include the care of children in places of worship during religious services".** A child day care center is "any place in which child day care is provided for five or more infants, preschool children, or school-age children outside of school hours in average daily attendance, other than children of the owner or administrator of the center, with or without compensation". Average daily attendance means "the maximum number of children cared for at one time each day the center is in operation during a quarter year period, divided by the number of days the center is in operation".*** Infants are defined as children less than 18 months old still using diapers, or not yet steadily walking. "Administrator" and "child-care staff member" are also defined.

Application for License

Day care center operators must apply for a license to the Director of Public Welfare if they are operating on January 1, 1970, or if they establish a center after that date. No center may be operated without a license after July 1, 1970. The procedure of applying for a license, examining the center, and issuing a license are prescribed. Licenses are good for one year. At the time of application, centers having both morning and afternoon programs and an average daily attendance of 30 or more will pay a fee of $100, and other centers will pay $50, and all centers will pay $25 upon application for renewal. Provisional licenses may be issued for periods of less than 1 year to allow centers time to meet licensing requirements. The license must be posted in the center and state the names of owner and administrator, the center's address, and authorized attendance for infants, preschoolers, and school-aged children. The license is valid only while the conditions specified on it are maintained.

Enforcement of Licensing Regulations

Centers must be inspected at least once a year without interference. The Director may issue orders to comply with the code, and after a hearing those found in violation may have their license revoked. They may appeal, as can applicants denied a license. At the Director's petition the Court of Common Pleas can grant injunctions against persons operating centers without a license.

Safety Requirements

After investigation and inspection the Director can grant the center a license if it complies with the following specifications: neither the owner nor the administrator has been convicted of a felony or a crime involving moral turpitude; buildings meet the construction, equipment, safety, and sanitation regulations; fire inspection within the previous year has found the center free from conditions hazardous to children's safety; the center has a license to prepare meals or lunches and meets the requirements for food-service operation if meals are served to children other than those of the owner and administrator; and the center complies with chapter 5104.

Program

Centers must provide 35 square feet of indoor space regularly available for day care for each child they are licensed for. There must be 60 square feet of outdoor play area for each preschool and school-aged child, surrounded by a fence at least 3.5 feet high. The program must supply both quiet and active play suitable to children's age levels and abilities, and provide play materials and equipment and a cot for each preschool child. Children may not be permitted to sleep on the floor, and furniture, materials, and equipment must be sanitary.

Employee Health

Administrator and employees must be "of good character and mentally and physically able to perform their duties". Employees must be examined by a physician 30 days before employment and annually while employed, and must have on file in the center a statement signed by the physician certifying that they are free from communicable diseases (including tuberculosis), physically fit for such employment, and immunized against polio and diptheria unless they have filed with the center a written request for exemption from the latter.

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*Lines 77 to 84, page 4.

**Lines 85 to 91, page 4.

***Lines 92 to 96, page 4.

Children's Health

Each child must be annually examined by a physician and have on file a signed statement that the child is free from communicable disease and is immunized unless the administrator waives this at the parent's request. The State Department of Health will establish the age at which the infants need be given tuberculosis tests and immunizations. The center must have a written plan to cover medical emergencies. In such a case, parents must be notified as soon as possible. A person trained in first aid by a doctor, nurse, or approved training program must be readily available at all times. Each child is examined every day by a person trained to recognize symptoms of disease, and, if illness is suspected, he is isolated (before he can enter the group) in a special area where an adult is always available. Children who become ill during the day are promptly turned over to parents, and no medicine, vitamins, or special diets are given without the specific prescription of a physician.

Staff Size

Whenever children are present, two responsible adults must be present. Children are organized in small groups and the maximum load of children per staff member is 8 for children under 18 months old, 10 for children 18 months to 3 years, 15 for those 3 to 5 years old, and 20 for 5-year-old and older children. If children of center personnel are present at the center they are included in these calculations.

Education of Personnel

The administrator must have a high-school education and by December 31, 1971, must have 2 years of higher education or of experience with young children and their parents. By that date all staff members must have a high-school education or have completed a special training program.

Miscellany

The administrator interviews children and parents before admission, supplies information, and permits parents to visit the center while in operation. He keeps confidential records of basic data about the children and employees' health certification. Child-care staff members are responsible for children's safety and discipline. A menu for the week is posted and any child except infants in the center between 11:00 a.m. and 1:30 p.m. is served a nourishing meal (dietary requirements are listed) and, in addition, those present all day receive a nutritious snack. Center facilities are to be considered separately from those of any associated living quarters.

Infant Care

Infants must be cared for in a first-floor room separate from older children, which complies with building regulations. Rooms must be ventilated, but there must be no direct drafts on children. Infants shall be arranged in units of eight or fewer, and hand-washing facilities must be available in the area. Formulas are to be prepared by parents if possible, or prepared according to written directions of parent or physician and clearly labeled and refrigerated. Cribs should be sturdy and have close bars, a firm mattress covered by waterproof material not dangerous to children, clean sheets, and no restraining devices. Diaper changing, storage, and laundering shall be done by methods which meet the approval of the Departments of Public Welfare and Health. Infants are to be cared for primarily by the same adult every day as much as possible. They must be removed from the crib and held or placed in a chair for all feedings and removed from the crib at other intervals during the day for individual attention. Each day they are to be allowed to move about comfortably and play in accordance with their developmental stage in an area apart from the sleeping quarter.

Director's Responsibilities

The Director of Public Welfare may set higher but not conflicting requirements for tax- and community-supported centers and develop standards as required by the Federal government for programs supported by Federal funds. He shall offer consulting services to help communities, agencies, or centers deal with problems related to day care programs and encourage training programs for child-care employees.

Day Care Advisory Council

A Day Care Advisory Council shall be formed to assist in the administration of these regulations and in developing child day care services. It will consist of 18 members appointed by the Director of Public Welfare subject to the Governor's approval, plus the Director of Public Welfare, the Superintendent of Public Instruction, the Director of Health, and the Director of Industrial Relations as ex officio members. Six members will represent the various types of day care centers, at least three will be parents of children attending centers, and the rest shall be representatives of the teaching, child development, medical, and nursing professions and other individuals interested in child welfare. One third of the initial appointments shall be for 1 year, one third for 2 years, and one third for 3 years, and subsequent appointments shall be for 3 years. Vacancies when there are unexpired terms will be filled. This council will advise the Department of Public Welfare on licensing and regulations of centers, and make an annual report. Council members will receive no pay but be reimbursed for necessary expenses.

Penalties for Violations

Anyone operating a center without a license may be fined a maximum of $100 for the first offense and $500 for each subsequent offense.

Day Care Centers and Early Education

Child day care, whether or not it explicitly acknowledges an educational function, nonetheless involves the child in an educational process. The important consideration here is the provisions affecting staff qualifications. Legislation as it affects minimal standards for health and medical services, safety, and nutrition is sound. The qualification proposed for administrators: a high-school education and 2 years of higher education or 2 years' experience with children, does not appear to be adequate for administering such a program, even though it may be the only practical way to begin. The report has emphasized the complexity concerning the young child's growth in such areas as sensory-motor, perceptual-cognition, language, and socialization skills. Only under a set of random conditions, would any administrator meeting these standards ever hope to obtain the necessary knowledge of child development which this report clearly reveals as essential in establishing quality educational experiences for the growing child. More important, however, is the very high probability that, in the absence of such knowledge, deprivating conditions could well occur. The report has documented unequivocally the fact that such conditions lead the child to developing disabilities in learning that result in a cumulative-deficit pattern of school achievement. The idea of special education for staff members is not clear in terms of what that education should be, its content, or its duration. The conditions of providing sanitary play materials and equipment, specifications for indoor and outdoor play, and considerations for active and quiet play suitable to children's age levels and abilities are significant provisions. Also, significant is the appointment of an Advisory Committee consisting of a cross section of professional and lay people directly involved and concerned with the enforcement of the regulations.

Significant as these two provisions may be, however, the emphasis does not appear to derive from a consideration of the educational process per se. This is clearly revealed in the composition of the Advisory Committee. Out of a committee of 18, references made seem to imply that the participation of the teaching profession and the profession of developmental psychology is not substantial. The State Department of Education should seek a larger representation on this very vital committee.

The significant impact that the programs hold for the child's development has more direct ramification or implication for the educational enterprise itself. In terms of the present nationwide trends, shifts are now being made to place programs such as Head Start, whose conceptualization parallels many of the proposed provisions of day care centers, within the jurisdiction of State Departments of Education. Important as welfare factors are, when compared to the potential benefits or liabilities that can be accrued in an educational sense, these conditions diminish in comparison. In summary, this investigator applauds the efforts to upgrade the rules and regulations covering Day Care Centers. It is a significant improvement over previous legislation. However, since the State of Ohio is now making it its business to look out for the welfare of its preschool-aged children, this legislation should be regarded only as a first step. Clearly, the need remains to assure that the young child's experiences in such centers enhances his opportunity for developing the skills needed for future success in schools.

Kindergarten and Prekindergarten Legislation

In terms of priorities previously discussed the proposed legislation in this area was a definite step in the right direction. The requirement for compulsory kindergarten for the districts was sound in terms of making programs available for all 5-year olds. The requirement, however, should have been extended to include compulsory attendance. The inclusion of permissive prekindergarten is also a sound move in terms of generating the conditions for future development of these kinds of programs throughout the state.

There has been a tendency with new programs such as Head Start and older programs such as nursery and day care centers and kindergarten, to go off in many separate directions. Clearly, the State Department of Education should provide quality leadership in the area of kindergarten via minimal standards. It should also provide quality leadership of an advisory nature concerning prekindergarten programs to assure that such programs are based on sound educational concepts of child development. In other words, the State Department of Education should give its implied approval of any district's proposals for prekindergarten before the program becomes operational. To be sure, flexibility is needed in order that local needs are met, but balanced programs are also needed and should not vary significantly from district to district any more than necessary. Leadership at the state level must be brought forward to assure a continuity of development for prekindergarten and kindergarten. Such leadership would soon place Ohio as the nationwide leader in preschool education.

There is a problem, however, in the exercise of advisory leadership in the formal education of preschool-aged children and that problem lies in the establishment of standards. The State Department of Education has no legal mandate to develop minimal standards for kindergarten since the program is not compulsory. Neither do they have any legal authority to develop standards for prekindergarten since this responsibility lies with the Child Welfare Board. In short the essential first step in educational leadership – establishment of minimal standards for quality education – cannot logically be conducted by the State Department of Education at this time.

In addition, the State Department of Education cannot develop a professional staff to provide the leadership in preschool education because it does not legally fall within its jurisdiction.

Thus, until legislation is passed which will place the legal responsibility for establishing minimal standards for the quality education of preschoolers and a staff to promote and help implement the standards, Ohio's progress in the formal education of preschool-aged children cannot be substantial.

XV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations stated for each of three priorities concern curriculum, teacher training, welfare of the child, parental involvement, and other related administrative aspects.

First Priority

The research findings suggest that preschool-age children reared in depressed poverty areas are exposed to a higher incidence of deprivating conditions than their more affluent counterparts resulting in the development of sets of learning disabilities which depress significantly their pattern of school achievement. There is evidence that this pattern of school achievement is characterized by a fanning-out effect in which deficiencies between children from homes in poverty-depressed areas and those children reared in affluent homes steadily increases over time. Thus, a cumulative-deficit effect appears to be developing in which the child's ability to achieve steadily decreases throughout the school years.

> **Recommendation 1**: It is therefore recommended that the State Department of Education place as its highest priority in preschool education, the establishment of a policy concerning the education of children reared in the poverty-depressed metropolitan, rural, and semirural areas of the state.

A second recommendation concerns the subsequent school years of these children, particularly, the first three years of elementary school. It must be remembered that regardless of how substantial the impact of a carefully developed preschool education program in the development of the children's capabilities, the deprivating conditions which characterize their environment will probably not change in a qualitative sense.

> **Recommendation 2**: Accordingly, it is recommended that the policy of education for these children be extended to include special considerations for educational planning during the first three years of school.

Curricular Programs

Children reared in depressed poverty areas appear to develop disabilities of learning which involve departures from normal patterns of development in the perceptual-cognitive and language processes. The deviations from the norm were found in perceptual processes involving the child's ability to distinguish objects on the basis of their concrete and abstract features and to use various classificatory skills to categorize and sort the objects and things either on the basis of their resemblance or functional features. Concerning language process, departures were found in the ability to use auditory skills with which to discriminate sounds, label the properties of objects and events, classify objects on the basis of other respective labels and use vocabulary, syntax and grammar to communicate and mediate thinking.

> **Recommendation 3**: It is recommended that the State Department of Education set up a commission of certified K-3 teachers and developmental and education psychologists to establish guidelines for the development of curricular program materials and methods, etc., which are needed to educate these children at the preschool level.

In accordance with this objective, guidelines are suggested in areas as follows:

Perception-Cognition

- To provide opportunities to observe, touch and manipulate a variety of both two-dimensional and three-dimensional objects (e.g., artwork, clay, building blocks) in order to allow the development of visual perceptual processes and an awareness of the invariant nature of objects themselves and their displacement properties.
- To provide story materials to be read to the children and musical recordings to which they may listen in order to develop the auditory discrimination skills of the child.
- To provide sets of concrete objects and play materials in order to help the child recognize the ways in which objects may be distinguished one from another (i.e., form or shape, color, size, and functional use).
- To provide a series of concrete objects and play materials of various forms, colors, and sizes in order to develop classificatory skills which involve sorting the materials on the basis of their physical properties (e.g., form, color) and on the basis of their functional properties (use).

Language

- To provide a standard model of the English language for the purpose of interacting with children such that they learn to label objects and events, to promote and increase their vocabulary and to use syntax and grammar to regulate the expression of language.

It is important that the materials developed match some of the experiences of the child based upon his culture rather than the experiences of the general culture at large.

Measuring Progress

Closely aligned to the concept of curriculum is the concept of observing the student's progress.

> **Recommendation 4**: Accordingly, it is recommended that the commission undertake a study with child developmentalists and specialists in the "clinical" observations of young children, concerning the development of procedures with which to measure the [illegible]'s ability to develop the normative patterns of skills characterizing his perceptual, cognitive, and language processes.

The methods should include a clinical observation of the child's abilities to do certain things in its normal sequence of development rather than place the child in a test-taking situation. The emphasis should be diagnostic and individualized to identify areas in which the development of the child departs from the norm and areas in which he does not.

Teacher Training

Arresting the trend towards a cumulative deficit for learning is within the state of the art for these children. It clearly requires a very careful development of curricular materials which derive their substance from the nature of the disabilities being accrued and the conditions which tend to prevent the normal development of the child's perceptual-cognition, language and self-concept processes. It also requires a very extensive and complex training program for teachers. Equipping a well-trained person with the most modern tools that the state of the art can provide enhances significantly that person's confidence in doing his job. On teaching the population children defined "First Priority", this is particularly significant in lieu of the effect teacher expectations have on the subsequent performances of the children.

> **Recommendation 5**: It is recommended that pre-service or on-the-job training of teachers include provisions for allowing the teacher to develop skills that increase his capabilities.

Implementing this recommendation would involve teachers capabilities to accomplish the following:

- To become a student of the cultures in which he is teaching in order that he may understand rather than judge the values of the children and the subsequent impact that these factors hold for his learning. Specifically, the teacher should learn skills ofan anthropological nature to understand more thoroughly the structure of the culture in which the child is developing. The teacher should be aware that the child is, in fact, surviving in a subculture and that there is no standard correct or incorrect way of behaving. There is rather the necessity to develop the capabilities and skills which permit him to operate effectively and efficiently in both cultures.

- To become sufficiently acquainted in the use of the curricular materials with the children, rather than learn about them in the child's absence. There must be provisions for a continual interface throughout the teacher's training between the teacher and the students he will one day be instructing. The results of experience in working with the materials and the children simultaneously will increase both the teacher's confidence and skill in improving the children's capabilities. It will further increase the probability of seeing that the children experience success because the teacher is skilled and knowledgeable enough to know not only how significant the success experiences are in promoting the development of achievement behavior, but also how to provide for its systematic development.

- To become proficient in the knowledge of child development in the growth of perception, cognition, language, and self-concept processes and to see their relevance in terms of both the curricular materials and the interaction process with the child.

- To become sufficiently proficient in the motor development of young children, particularly as it relates to the development of the visual perception in tactile and practical manipulation processes.

- To become sufficiently proficient in how socialization patterns develop to assure that children learn to get along with one another and to assure that the teacher does not attempt to develop socialization skills whose complexity might fall well beyond the child's capabilities.

- To become sufficiently proficient in the principles of learning, particularly in the use of operant learning conditions of reinforcement. The purpose here is to equip the teacher with the skills of how to stabilize the capabilities being developed by the child through the judicious use of reinforcers and how the latter can be identified.

- To develop a sufficient understanding of ways to check the progress of the child. Here we are interested in a "clinical" rather than an objective testing situation in which the teacher learns how to diagnose areas in which the child's growth along certain dimensions departs from the normative pattern of development.

> **Recommendation 6**: Further it is recommended that the commission look into the possibility of developing Preschool Education Programs in Colleges of Education throughout the state with particular emphasis on the development of teacher skills at this level for children from the depressed poverty areas.

Welfare of the Child

Research on nutrition and learning was seen to influence the child's learning in a number of ways: less able to attend and because of a low level of energy, more easily fatigued in the complex and demanding task of learning. We also noted how the "infection" of many types and varieties confounds and adds to the conditions affecting the energy and metabolism of the child. Aside from the biological needs is the high probability that problems in seeing, hearing, and so on might go unnoticed and, as such, inadvertantly introduce a deprivating condition of a sensory-stimulation type.

It appears clear that the school has a vested interest in the welfare of the child in terms of his basic needs and should undertake the responsibilities to see that the needs are met.

> **Recommendation 7**: Accordingly, the commission should undertake to examine ways in which clothing, meals, and medical examinations can be provided for the child and to examine ways in which the agencies responsible for the services can be coordinated efficiently and effectively through the State Department of Education.

Parental Involvements

Inner-city parents hold high aspirations for their child in education and tend to view with some positiveness commitments to early education: Head Start being a prime example of this positiveness. The favorable attitude probably emerges not so much from the program in terms of its successes which were relatively few, but from the commitment made to do something. When Head Start was aimed for a particular community, answers were immediately available to questions raised from the parents and community leaders such as "What are you prepared to do?", "What kind of objectives are in mind?", "What resources are needed and what resources can be provided?", but more importantly, "What is the financial commitment you are able to make?"

> **Recommendation 8**: It is recommended that the commission appoint a committee of lay people, parents, and social scientists to find out how to enter a community with an active oriented educational program of high merit and considerable benefit to the children in a way that predisposes that community towards a favorable attitude towards that program and its implementation.

Administrative Aspects

Pupil-Teacher Ratio. Preschool-education data are not now available to project teacher supply in the area of preschool education. One of the problems is establishing pupil-teacher ratios. Establishing ratios is difficult since we are at a period of entering an era of preschool education. However, some attention should be given to what desirable pupil-teacher ratios should be.

> **Recommendation 9**: Accordingly, the commission should study and define what optimal teacher and adult ratios are desirable and then examine what types of data are needed to project supply (i.e., number of certified kindergarten, primary, and elementary teachers, number of teachers available for part-time employment, etc.), in order to examine the extent of manpower shortage.

There are some alternatives in addition to adding a preschool curriculum in the colleges and universities. Judicious use can also be made of qualified parents and other auxiliary personnel. Accordingly, the commission should spell out what aspects of the child's preschool experiences can be handled by these two population groups under the supervision and direction of the teacher.

Intensity of Program. It is important to note that when significant achievements were found for Head Start, it was with programs which ran 9 months to 1 year. There is little doubt that the summer programs do not bring about enduring capabilities and skills.

> **Recommendation 10**: Accordingly, preschool programs for the children should run the entire year. Opportunities for outdoor summer activities involving trips to zoos, museums, etc., should be included.

There is also one other advantage here and that concerns the daily duration of the program. There is good reason educationally to keep the children for most of the day, particularly since it is both possible and desirable to build in some flexibility in the programs concerning rest and play activities. More important, however, is the fact that a high probability exists that mothers of these children will want to work. In addition to giving mothers a chance to work, a day-care preschool program will not only expose the children to a more stimulating educational experience but will remove them from deprivating conditions which are not conducive to normal growth and development.

> **Recommendation 11**: Accordingly, it is recommended that the preschool programs for the children be established to include a full days' activities, 5 days a week, rather than some combination of half days, full days, every other day, etc.

Facilities, Health Standards, and Eligibility. The report did not address itself to the problem of facilities per se, nor did it directly consider who should attend.

> **Recommendation 12**: The commission should identify what guidelines should be established concerning facilities in terms of space, safety, and sanitary conditions and then attempt to determine what facilities might be available for leasing, purchasing, etc.

Recommendation 13: The commission should undertake a study concerning the criteria employed in Head Start and to examine what, if any, refinement in the statistical procedures might be made to identify target populations of children.

Day Care Legislation

The qualification of the staff and composition of the advisory committee does not reflect a substantial commitment to the educational process per se. There appears to be little in the way of controls concerning the types of educational experiences the child is provided. The jurisdiction appears to have been misplaced. The experiences these children have may or may not offset the potential learning disabilities which they may be acquiring at home.

Recommendation 14: Accordingly, it is recommended that the Day Care Centers be phased out of the Department of Public Welfare and into the jurisdiction of the State Department of Education at such time that this department has developed its policy concerning preschool education in Ohio and is ready to begin implementation.

Second Priority

Kindergarten

The second priority in the area of preschool education concerns kindergarten in the state of Ohio.

Compulsory Attendance. The evidence concerning kindergarten is somewhat scattered but conclusive. The research which compares achievement of first-grade children who attended kindergarten and those who did not, clearly favors those with kindergarten. National statistics presented show no more than six states which do not have state statutes concerning kindergarten. The Elementary and Secondary Education Division of the Ohio Department of Education reports that over the past decade kindergarten enrollment has increased 41.3 percent. Approximately 70 percent of all Ohio's elementary school systems now offer kindergarten.

Recommendation 15: In view of the national and Ohio trends and evidence concerning the benefits of kindergarten, it is recommended that the attendance in kindergarten be made compulsory for 5-year-old school-age children.

Recommendation 16: It is recommended that the commission develop a procedure to determine the exact number of employed teachers with primary/kindergarten certificates and/or elementary certificates.

Recommendation 17: In addition, the commission should develop minimal standards concerning curriculum, pupil-teacher ratio, and other considerations normally included in the elementary standards.

As part of the minimal standards, guidelines for curriculum should be established to ensure continuity of programming throughout the state and to ensure the experiences provided are linked to the skills required for successful achievement in the first grade. The guidelines for kindergarten should therefore be based upon the premise of increasing the liklihood of success in the first grade rather than replacing kindergarten with first grade objectives.

Third Priority

Prekindergarten

The evidence conducted with nursery schools suggests also that children from middle- to upper-class homes benefit from organized programs of preschool education. The need for prekindergarten among those homes is not as great since there is a high probability that many of the experiences which a child needs for the normal development of skills needed for success in school, already exist in the home. Trends are appearing which suggest that, in the next decade, increasing demands might be made on the concept of preschool.

Recommendation 18: Accordingly, Ohio should implement permissive prekindergarten as the first in a series of developmental stages in anticipation of the future needs for prekindergarten.

Recommendation 19: It is recommended that guidelines be established concerning the qualifications of teachers, pupil-teacher ratios, facilities and space, health standards and curriculum to help school districts establish their prekindergarten programs.

Many of the guidelines for curriculum and staffing can be derived directly from the report. Other information can come from the commission studies suggested in the discussion on recommendations and conclusions concerning the First Priority.

Staffing. To carry out the recommendations of this report, it will be necessary to develop a staff with expertise in early education.

Recommendation 20: Accordingly, it is recommended that the State Department of Education be provided sufficient funds for expanding its staff to include specialists in this area.

Recommendation 21: It is recommended that the staff be utilized in a leadership role that would include the counseling of individual school districts in the conceptual development and implementation of kindergarten educational programs.

Experimental and Demonstration Programs. Repeated references made in the report documented unequivocally that a carefully conceived program would benefit greatly preschool-aged children, particularly those from the poverty-depressed areas of the state. A need remains, however, to develop curriculum materials and to test them empirically.

Recommendation 22: Accordingly, funds should be provided to the State Department of Education for experimental and demonstration programs.

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APPENDIX A

ESTIMATES OF CHILDREN BY AGE FOR OHIO COUNTIES

TABLE A-1. ESTIMATED NUMBER OF CHILDREN AGED 3, 4, AND 5 YEARS BY POVERTY STATUS[(a)] FOR COUNTIES IN OHIO, 1968

County	Estimated Percent of All Ohio Children[(a)]	All Children Aged				Children in Low-Income Families Aged			
		Total	3 Years	4 Years	5 Years	Total	3 Years	4 Years	5 Years
Adams	34.4	1,492	437	512	543	513	150	176	187
Allen	11.4	6,820	2,166	2,331	2,323	778	247	266	265
Ashland	10.5	1,870	564	631	675	196	59	66	71
Ashtabula	11.0	4,738	1,527	1,611	1,600	521	168	177	176
Athens	21.5	3,870	1,132	1,307	1,431	832	243	281	308
Auglaize	12.4	2,052	685	726	641	254	85	90	79
Belmont	15.3	3,156	1,066	1,121	969	483	163	172	148
Brown	24.5	1,400	435	512	453	343	107	125	111
Butler	8.0	10,135	3,299	3,408	3,428	811	264	273	274
Carroll	15.0	609	236	215	158	91	35	32	24
Champaign	15.5	2,176	659	716	801	337	102	111	124
Clark	10.0	11,611	3,629	3,886	4,096	1,162	363	389	410
Clermont	8.9	5,544	1,734	1,884	1,926	493	154	168	171
Clinton	18.1	2,740	780	900	1,060	496	141	163	192
Columbiana	11.8	5,032	1,663	1,670	1,699	593	196	197	200
Coshocton	15.6	2,248	691	779	778	351	108	122	121
Crawford	10.9	3,777	1,111	1,261	1,405	411	121	137	153
Cuyahoga	7.1	79,804	26,662	27,207	25,935	5,666	1,893	1,932	1,841
Darke	15.9	3,110	964	1,077	1,069	494	153	171	170
Defiance	11.4	2,277	720	777	780	260	82	89	89
Delaware	11.8	2,637	726	978	933	311	86	115	110
Erie	8.3	5,695	1,724	1,902	2,069	473	143	158	172
Fairfield	12.2	5,172	1,513	1,756	1,903	631	185	214	232
Fayette	18.9	1,679	516	561	602	318	98	106	114
Franklin	8.4	58,020	17,826	19,668	20,526	4,873	1,497	1,652	1,724
Fulton	12.8	2,412	751	825	836	309	96	106	107
Gallia	23.5	1,357	381	461	515	319	90	108	121
Geauga	7.1	4,919	1,493	1,670	1,756	350	106	119	125
Greene	8.0	8,250	2,506	2,857	2,887	660	200	229	231
Guernsey	18.4	1,709	498	596	615	315	92	110	113
Hamilton	9.1	47,759	15,610	16,459	15,690	4,347	1,421	1,498	1,428
Hancock	11.7	4,363	1,342	1,448	1,573	510	157	169	184
Hardin	19.1	1,726	511	617	598	330	98	118	114
Harrison	17.9	795	248	285	262	142	44	51	47
Henry	13.1	1,428	456	496	476	187	60	65	62
Highland	25.6	2,142	614	732	796	548	157	187	204
Hocking	18.9	1,182	357	376	449	223	67	71	85
Holmes	22.5	1,250	434	423	393	281	98	95	88
Huron	11.4	2,992	954	1,008	1,030	341	109	115	117
Jackson	21.1	1,086	354	361	371	229	75	76	78
Jefferson	10.0	4,336	1,458	1,448	1,430	434	146	145	143
Knox	12.9	2,293	715	805	773	296	92	104	100
Lake	4.1	14,958	4,559	5,048	5,351	613	187	207	219
Lawrence	16.8	3,739	1,204	1,281	1,254	628	202	215	211
Licking	10.6	8,770	2,558	2,943	3,269	930	271	312	347
Logan	15.8	1,416	479	487	432	221	76	77	68
Lorain	7.3	17,330	5,493	5,799	6,038	1,265	401	423	441
Lucas	8.5	20,137	6,832	6,820	6,485	1,712	581	580	551
Madison	13.9	2,035	601	701	732	283	84	97	102
Mahoning	8.3	7,791	2,947	2,666	2,178	647	245	221	181
Marion	11.2	4,192	1,335	1,417	1,440	470	150	159	161

TABLE A-1. (Continued)

County	Estimated Percent of All Ohio Children(a)	All Children Aged				Children in Low-Income Families Aged			
		Total	3 Years	4 Years	5 Years	Total	3 Years	4 Years	5 Years
Medina	8.0	5,566	1,690	1,873	2,003	445	135	150	160
Meigs	29.3	1,066	336	324	406	312	98	95	119
Mercer	14.5	2,822	885	929	1,008	409	128	135	146
Miami	10.4	5,541	1,703	1,846	1,992	576	177	192	207
Monroe	25.8	1,368	411	472	485	353	106	122	125
Montgomery	7.5	31,130	10,150	10,567	10,413	2,335	761	793	781
Morgan	22.4	868	275	289	304	195	62	65	68
Morrow	13.9	1,831	561	612	658	254	78	85	91
Muskingum	13.4	5,139	1,625	1,727	1,787	688	218	231	239
Noble	25.8	528	175	192	161	137	45	50	42
Ottawa	9.4	1,848	600	597	651	173	56	56	61
Paulding	14.7	1,474	446	498	530	217	66	73	78
Perry	18.3	1,310	415	440	455	240	76	81	83
Pickaway	16.4	3,097	934	1,050	1,113	518	153	172	183
Pike	25.2	1,085	339	365	381	273	85	92	96
Portage	8.0	9,020	2,699	3,023	3,298	722	216	242	264
Preble	13.7	2,389	742	832	815	328	102	114	112
Putnam	17.0	2,143	696	715	732	364	118	122	124
Richland	8.1	8,070	2,523	2,767	2,780	653	204	224	225
Ross	15.5	3,523	1,132	1,215	1,176	545	175	188	182
Sandusky	10.5	3,072	1,042	1,019	1,011	322	109	107	106
Scioto	18.3	3,766	1,200	1,299	1,267	690	220	238	232
Seneca	11.0	3,015	1,016	1,050	949	332	112	116	104
Shelby	12.6	2,715	884	916	914	341	111	115	115
Stark	8.1	18,717	6,169	6,302	6,246	1,516	500	510	506
Summit	6.8	30,497	9,681	10,318	10,498	2,074	658	702	714
Trumbull	7.3	11,335	3,723	3,782	3,830	828	272	276	280
Tuscarawas	12.0	3,692	1,169	1,291	1,232	443	140	155	148
Union	16.1	1,084	341	381	362	174	55	61	58
Van Wert	13.7	1,055	349	353	353	144	48	48	48
Vinton	27.1	281	106	82	93	76	29	22	25
Warren	8.9	7,546	2,202	2,601	2,743	671	196	231	244
Washington	17.4	4,002	1,240	1,369	1,393	696	216	238	242
Wayne	11.5	5,530	1,630	1,873	2,027	635	187	215	233
Williams	13.0	2,283	698	765	820	297	91	99	107
Wood	9.5	4,386	1,344	1,583	1,459	417	128	150	139
Wyandot	14.6	956	334	328	294	140	49	48	43
Total		591,792	188,650	201,070	202,072	57,804	18,328	19,652	19,824

(a) Living in families with less than $3000 annual income (1960 dollars).

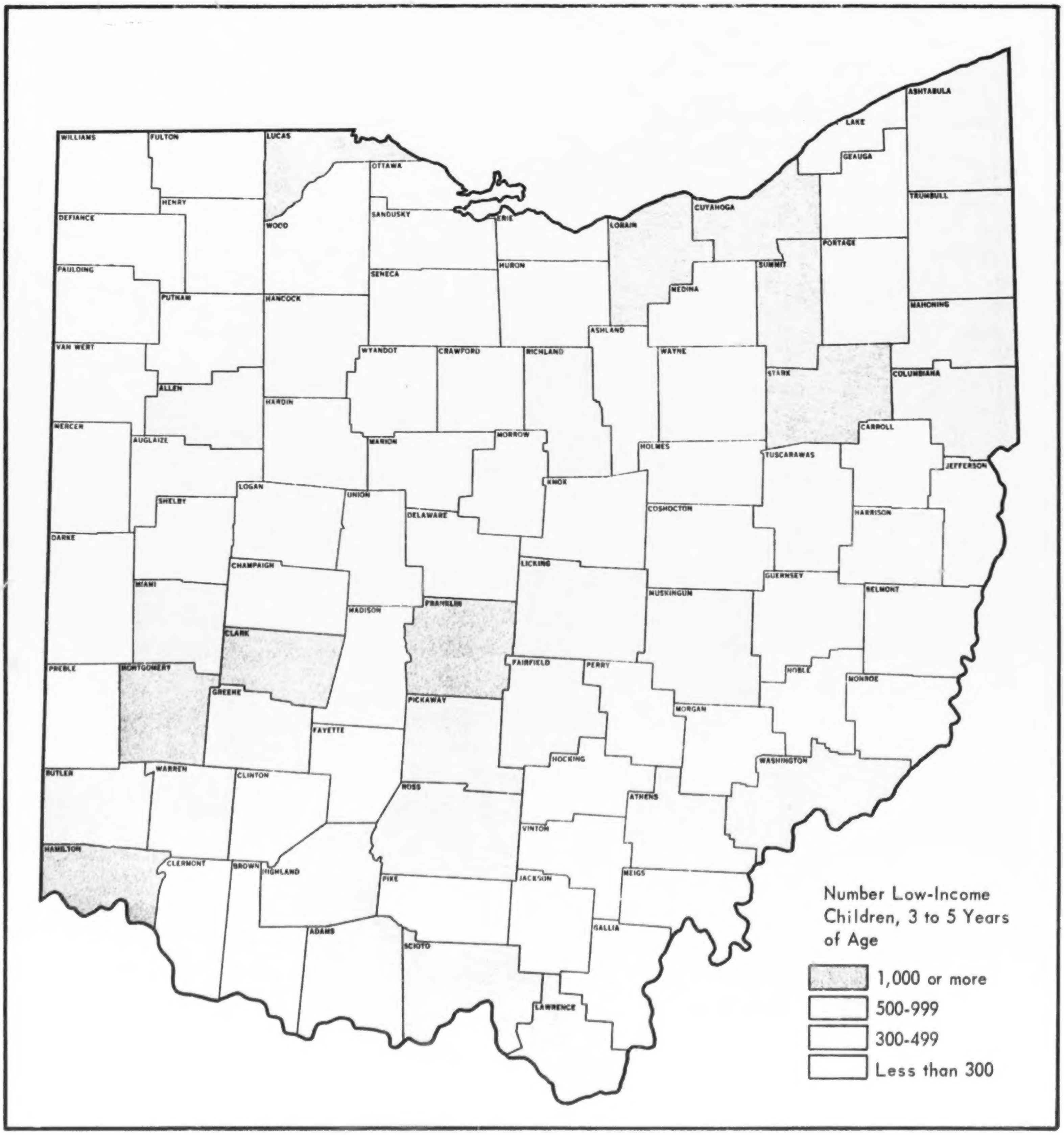
WILLIAMS
FULTON
LUCAS
OTTAWA
HENRY
DEFIANCE
WOOD
SANDUSKY
ERIE
LORAIN
CUYAHOGA
LAKE
GEAUGA
ASHTABULA
TRUMBULL
PORTAGE
SUMMIT
MEDINA
HURON
SENECA
PAULDING
PUTNAM
HANCOCK
MAHONING
ASHLAND
WAYNE
VAN WERT
WYANDOT
CRAWFORD
RICHLAND
STARK
COLUMBIANA
ALLEN
HARDIN
MERCER
AUGLAIZE
MARION
MORROW
HOLMES
TUSCARAWAS
CARROLL
JEFFERSON
KNOX
LOGAN
UNION
SHELBY
DELAWARE
COSHOCTON
HARRISON
DARKE
LICKING
CHAMPAIGN
GUERNSEY
BELMONT
MIAMI
MADISON
FRANKLIN
MUSKINGUM
CLARK
PREBLE
MONTGOMERY
FAIRFIELD
PERRY
NOBLE
MONROE
GREENE
PICKAWAY
MORGAN
FAYETTE
HOCKING
WASHINGTON
BUTLER
WARREN
CLINTON
ROSS
ATHENS
VINTON
HAMILTON
CLERMONT
BROWN
HIGHLAND
PIKE
JACKSON
MEIGS
GALLIA
ADAMS
SCIOTO
LAWRENCE
Number Low-Income Children, 3 to 5 Years of Age
▨ 1,000 or more
☐ 500-999
☐ 300-499
☐ Less than 300

FIGURE A-1. ESTIMATED NUMBER OF YOUNG CHILDREN IN LOW-INCOME FAMILIES BY COUNTY FOR OHIO, 1968

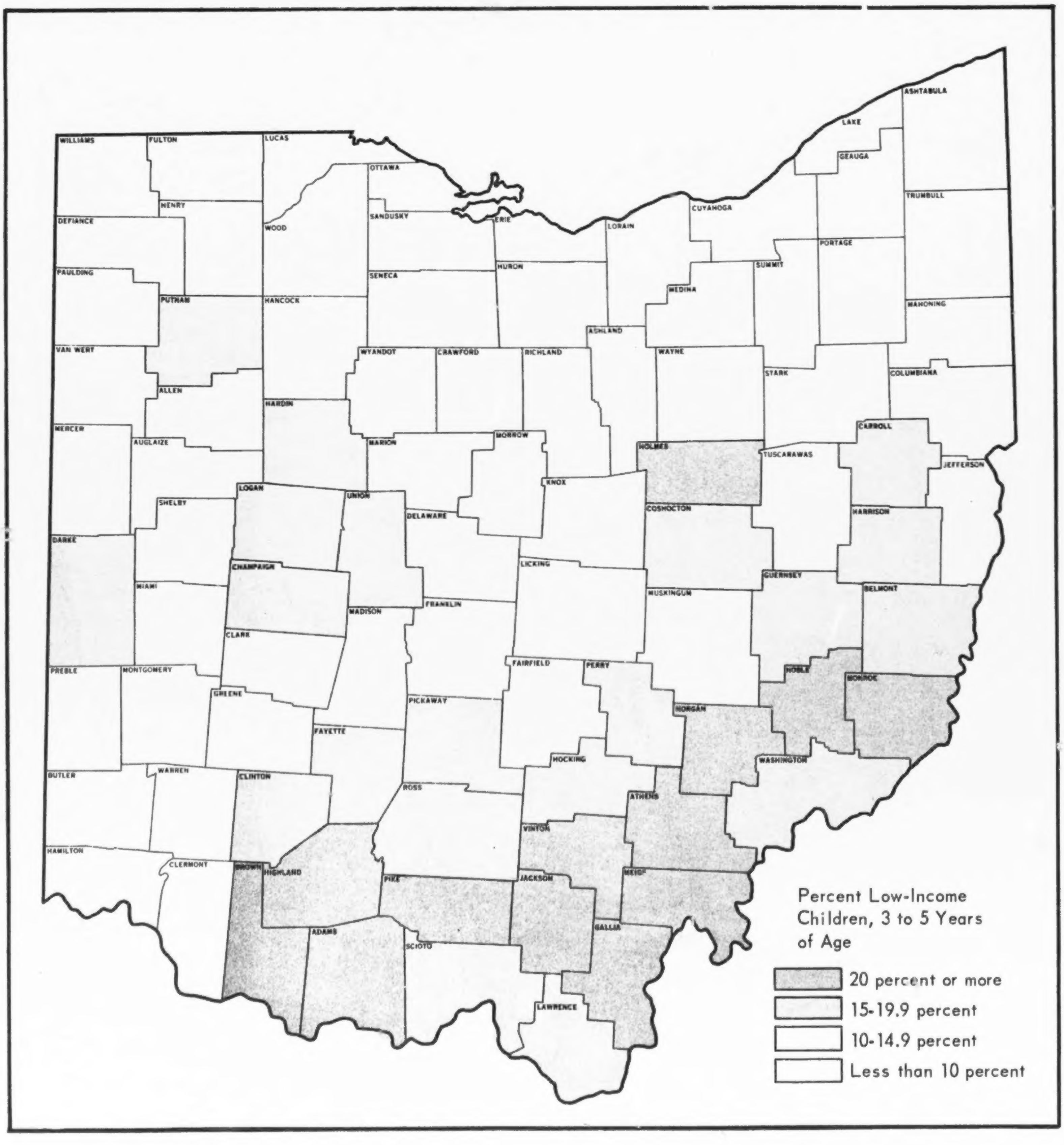
WILLIAMS
FULTON
LUCAS
OTTAWA
HENRY
DEFIANCE
WOOD
SANDUSKY
ERIE
LORAIN
CUYAHOGA
LAKE
ASHTABULA
GEAUGA
TRUMBULL
PORTAGE
SUMMIT
MEDINA
HURON
SENECA
PAULDING
PUTNAM
HANCOCK
MAHONING
ASHLAND
VAN WERT
WYANDOT
CRAWFORD
RICHLAND
WAYNE
STARK
COLUMBIANA
ALLEN
HARDIN
MERCER
AUGLAIZE
MARION
MORROW
CARROLL
HOLMES
TUSCARAWAS
JEFFERSON
KNOX
LOGAN
UNION
SHELBY
DELAWARE
COSHOCTON
HARRISON
DARKE
CHAMPAIGN
LICKING
GUERNSEY
MIAMI
MADISON
FRANKLIN
MUSKINGUM
BELMONT
CLARK
PREBLE
MONTGOMERY
FAIRFIELD
PERRY
NOBLE
MONROE
GREENE
PICKAWAY
MORGAN
FAYETTE
BUTLER
WARREN
CLINTON
HOCKING
WASHINGTON
ROSS
ATHENS
VINTON
HAMILTON
CLERMONT
BROWN
HIGHLAND
PIKE
JACKSON
MEIGS
GALLIA
ADAMS
SCIOTO
LAWRENCE
Percent Low-Income Children, 3 to 5 Years of Age
20 percent or more
15-19.9 percent
10-14.9 percent
Less than 10 percent

FIGURE A-2. ESTIMATED PERCENT OF YOUNG CHILDREN IN LOW-INCOME FAMILIES BY COUNTY FOR OHIO, 1968

APPENDIX B

TECHNICAL PROCEDURES FOR PROJECTING CHILDREN BY AGE FOR OHIO COUNTIES

APPENDIX B

TECHNICAL PROCEDURES FOR PROJECTING CHILDREN BY AGE FOR OHIO COUNTIES

Estimates by county of the number of children aged 3, 4, and 5 years are based on the number of births recorded by county of residence of parents for the respective cohorts. For births through 1967, this information was available from the Ohio Department of Health, Division of Vital Statistics, Columbus, Ohio. Thus, children aged 3 years in 1968 are approximated by the number of children born to persons living in the appropriate county of residence in 1965, plus an allowance for net migration in these age groups. For children not yet born, projections were made by assuming that birth trends after 1968 in Ohio will parallel those projected by the U.S. Bureau of the Census for the United States as a whole.*

No allowance was made for mortality from birth to age five, since over 97 percent of all children born in the United States currently survive to this age.** To the numbers represented by each birth cohort, allowances were made for changes due to migration into or from the birth cohort. These estimates assume that trends in net migration observed for each county during 1960-65*** continued through 1968. The age distribution of intercounty net migrants in Ohio was based on the distribution observed for the United States during 1966-1967.**** Thus of the total net migration, all ages combined, observed during 1966-1967, approximately 2.5 percent was represented by single-year age groups under 5 years of age, such as children aged 4.0-4.9 years.

Estimates of Young Children in Low-Income Families

Data are not available for individual states or counties on the number of children living in low-income families by age of the child. However, such data are available for the United States, by place of residence by color, for 1960.***** On this basis, a statistical relationship was established between (1) children under 6 years of age living in families with incomes of less than $3,000 in 1959 as a proportion of all children under 6 years in 1960 (taken as the dependent variable), and (2) families with incomes of less than $3,000 in 1959 as a proportion of all families in 1960. The relationship, established by classical least-squares linear regression, can be expressed as follows: $X_1 = -.0077 + 1.1081 X_2$. Of the variation in the dependent variable, 98 percent was explained by the independent variable.

Thus, given the proportion of families with low incomes for any area, a state or county, the expression provides a relatively reliable method for estimating the corresponding number of young children in families below the poverty level.

Projections of family income assume that trends the reduction of poverty observed since the late 1950's through 1966* will continue through 1968, and will remain at that level through 1975; illustrative figures assume a continuation in the downward trend at the 1950-1966 rate. While it is true that economic growth has not been uniform throughout Ohio since 1960, we have assumed that increases in family income during this period have been experienced at the same rate throughout the State. Refinements of this assumption would not substantially alter the results of this study.

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*U.S. Bureau of the Census, Current Population Reports, P-25, No. 381, "Projections of the Population of the United States, by Age, Sex, and Color to 1990", December, 1967.

**U.S. Department of Health, Education, and Welfare, Public Health Service, United States Life Tables: 1959-1961. PHS Publication No. 1252, I (1), December, 1964.

***Rosenberg, op. cit., March, 1967.

****U.S. Bureau of the Census, Current Population Reports, P-20, No. 171, "Mobility of the Population of the United States, March 1966 to March 1967", April, 1968.

*****U.S. Bureau of the Census, 1960 Census of Population, PC (2) – 4A, Subject Report, "Families", Table 13; and PC (2) – 4B, "Persons by Family Characteristics", Table 10a.

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*U.S. Bureau of the Census, Current Population Reports, P-60, No. 54, "The Extent of Poverty in the United States, 1959-1966,", May 1968.

APPENDIX C

KINDERGARTEN SURVEY

TABLE C-1. KINDERGARTEN SURVEY

State	Compulsory Kindergarten	Permissive Kindergarten	Attendance		Requested Survey	State Aid	Bills Pending	Comments
			Optional	Compulsory				
Alabama		no	x		x	no(a)	x	Bill pending
Alaska		yes	x			yes		
Arizona		yes	x			no		
Arkansas		yes	x			yes		
California		yes	x			yes		Provides for early admission into 1st grade for accelerated students
Colorado	1970		x			yes		Compulsory if district is to be accredited by the state
Connecticut	yes, 1970		x			yes(a)		
Delaware		yes	x			yes		During the 1st year of state aid, there was a 50% increase in students attending
Florida	yes		x			yes		To be fully implemented by 1973
Georgia		yes	x		x	yes	x	Legislation pending for compulsory kindergarten
Hawaii(a)		yes				yes		
Idaho		no				no(a)		Only private kindergarten. Legislation failed last 3 sessions
Illinois	1970		x			yes		Compulsory kindergarten by July 1, 1970
Indiana		yes	x			yes		
Iowa		yes	x			yes		All school districts have kindergarten. Permissive legislation is pending for preschool for 4- and 5-year olds.
Kansas		yes	x			yes		
Kentucky		yes	x			no		
Louisiana		yes	x			yes		
Maine		yes	x			yes	x	(1) Age 5 on or before 9/1 for admission. (2) Compulsory kindergarten.

TABLE C-1. (Continued)

State	Compulsory Kindergarten	Permissive Kindergarten	Attendance		Requested Survey	State Aid	Bills Pending	Comments
			Optional	Compulsory				
Maryland		yes			x	yes		
Massachusetts	yes, 1973		x			yes		Compulsory kindergarten to be fully implemented by 1973
Michigan		yes	x			yes		
Minnesota		yes	x			yes		Legislation died in committee
Mississippi		yes	x			no		
Missouri		yes				yes		
Montana		yes				no		State aid issue failed last session
Nebraska		yes	x			yes		
Nevada		yes	x			yes		
New Hampshire		yes	x		x	no		
New Jersey		yes	x			yes		Permissive kindergarten, but all 5-year olds must be admitted to public school. Result: virtually all school districts have kindergarten. There are more students in kdgn than any other grade level. There is existing permissive legislation for 4-year olds kdgn and nursery school.
New Mexico						no(a)		Referred by them to HEW for information regarding their state
New York		yes	x			yes		Additional funds for children from Indian reservations
N. Carolina		yes	x			no	x	Title I funds now, bill pending for state aid
N. Dakota		yes				no		
Ohio		yes	x			yes	x	Senate Bill 181 pending for compulsory kindergarten in 1972
Oklahoma		yes	x			yes		
Oregon		yes	x			no		Title I funds now (Oregon)
Pennsylvania		yes	x			yes		Free milk for all kindergarten and 1st graders

TABLE C-1. (Continued)

State	Compulsory Kindergarten	Permissive Kindergarten	Attendance		Requested Survey	State Aid	Bills Pending	Comments
			Optional	Compulsory				
R. Island	yes, 1969					yes		Compulsory kindergarten to be effective by September, 1969
S. Carolina		yes	x			no		
S. Dakota		yes	x			no		
Tennessee		yes	x			yes(a)		Limited state aid in a pilot program
Texas		yes	x			no		Use Title I funds. Recent legislation passed bill for kindergarten state aid (questionable outcome – depending upon Governor's signature). State aid for nonspeaking preschool students, preschool deaf children 3-4-5 year olds, and have lowered the age to 3 for handicapped pre-schooloers
Utah		yes	x			yes		
Vermont		yes	x			yes		
Virginia		yes				yes		
Washington		yes	x			yes		
W. Virginia		yes	x			no		
Wisconsin		yes	x			yes		Have prekindergarten for 4-year olds
Wyoming		yes	x			yes		
Washington, D.C.		yes	x			yes		Have regular school funds. All schools have kindergarten – some have preschool
Canal Zone	yes		x			yes		Operates as a single school district
Guam		no				no		Only private kindergarten now. Expect public in 1972
Puerto Rico		yes				no		
Samoa		no				no		Small private kindergarten only
Virgin Islands		yes				no		Operates as a state and local agency

(a) Information from ERS Circular, No. 5, 1968, Educational Research Service, American Association of School Administrators and Research Division, N.E.A., 1201 Sixteenth St., N.W., Washington, D. C. 20036.